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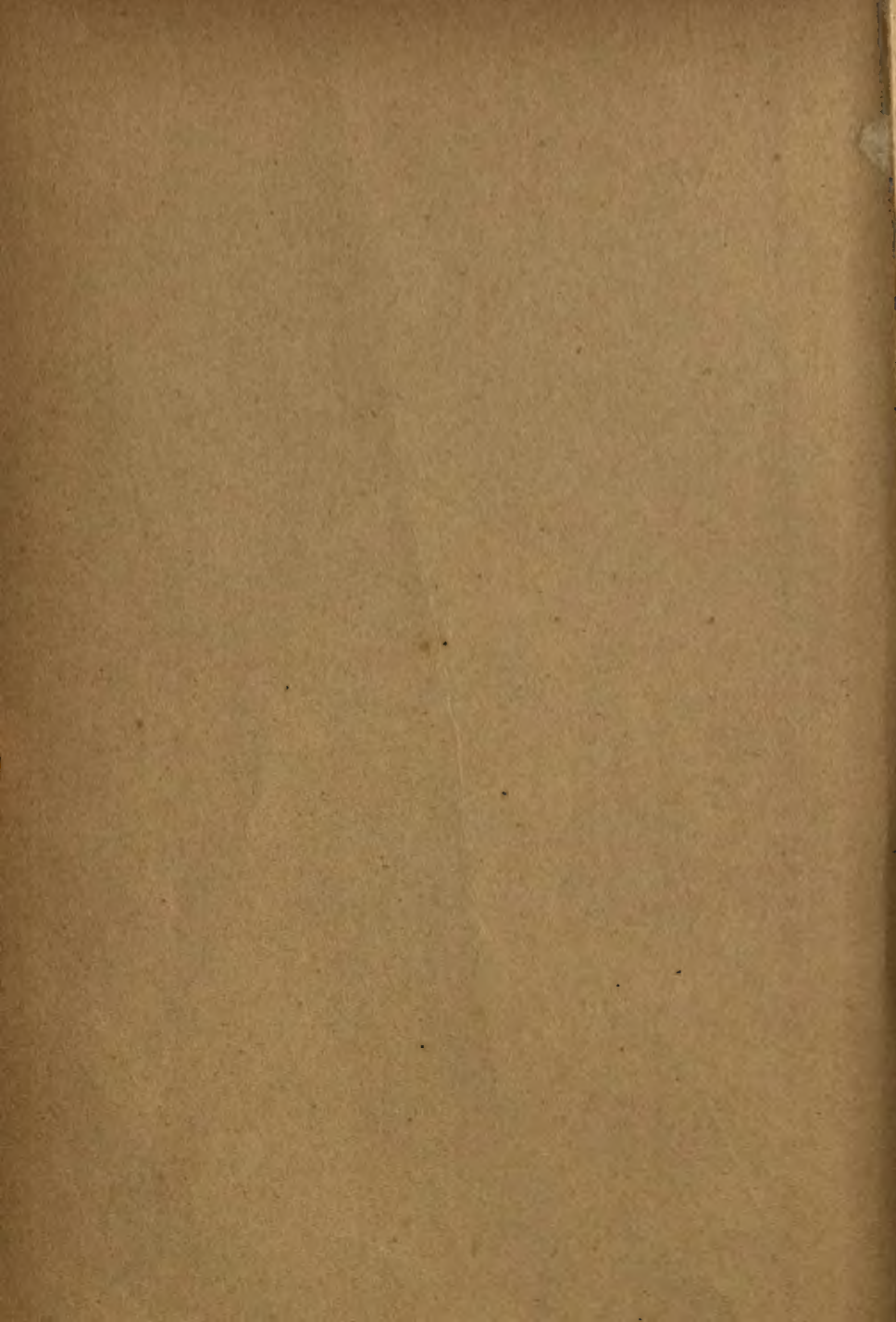
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The Principles
of
Teaching

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The Principles *of* Teaching

BY

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PREFACE

THROUGH many years of experience in the education and training of teachers, the author has come to the conclusion that prospective teachers need not so much a body of learnings about professional matters as they do a sound basis of principles upon which to build a system of teaching. Unless teachers master such fundamental principles, they tend to acquire in their professional studies merely a quantity of specific learnings which amount to little more than a book of recipes. As a result, they are wholly unprepared to deal with professional problems on a rational basis.

In the present volume it is assumed that the teacher in training has a general, cultural education, including some acquaintance with psychology. Although one may be well educated, one is not prepared to teach who lacks a fundamental grasp of the principles and processes involved in the education of a person. The emphasis, therefore, is placed upon the processes of learning and upon the characteristics of the learner. Elaborate teaching procedures and content materials, accordingly, have been omitted and left to other volumes.

The book is intended primarily for classes in the principles of teaching in the elementary school, although it is not confined to that field, because the principles of learning and of teaching are essentially the same for all ages and levels of learning. The text is written as a guide to fundamental

thinking about teaching, and not as a set of prescriptions for a teacher to follow. By consulting the vast literature dealing with the various topics presented, these topics can easily be expanded to suit the needs of any.

For several years the author has used with satisfaction most of the chapters as a basis for the units of his course in the principles of teaching. The chapter headings are the titles of the units, and the subdivisions are the elements necessary to an understanding of the units. Work sheets containing the problems and references necessary to master each unit are prepared for the students. Different lengths of time are used for each unit, depending upon the progress of the students. As a rule, double time is given to the chapter on the characteristics of learning and the three chapters dealing with the types of learning and teaching. The unit outlines, and also the chapters, can be expanded to include as much illustrative material as desired, with problems relating to the application of the principles in various classroom situations.

The author gratefully acknowledges his indebtedness to Dr. W. C. Hoppes, Associate Professor of Education and Director of the Campus Training School of Bowling Green State University, who not only read and offered constructive criticism of the manuscript, but also gave invaluable advice, inspiration, and encouragement during the entire period of preparation of this volume.

H. C. W.

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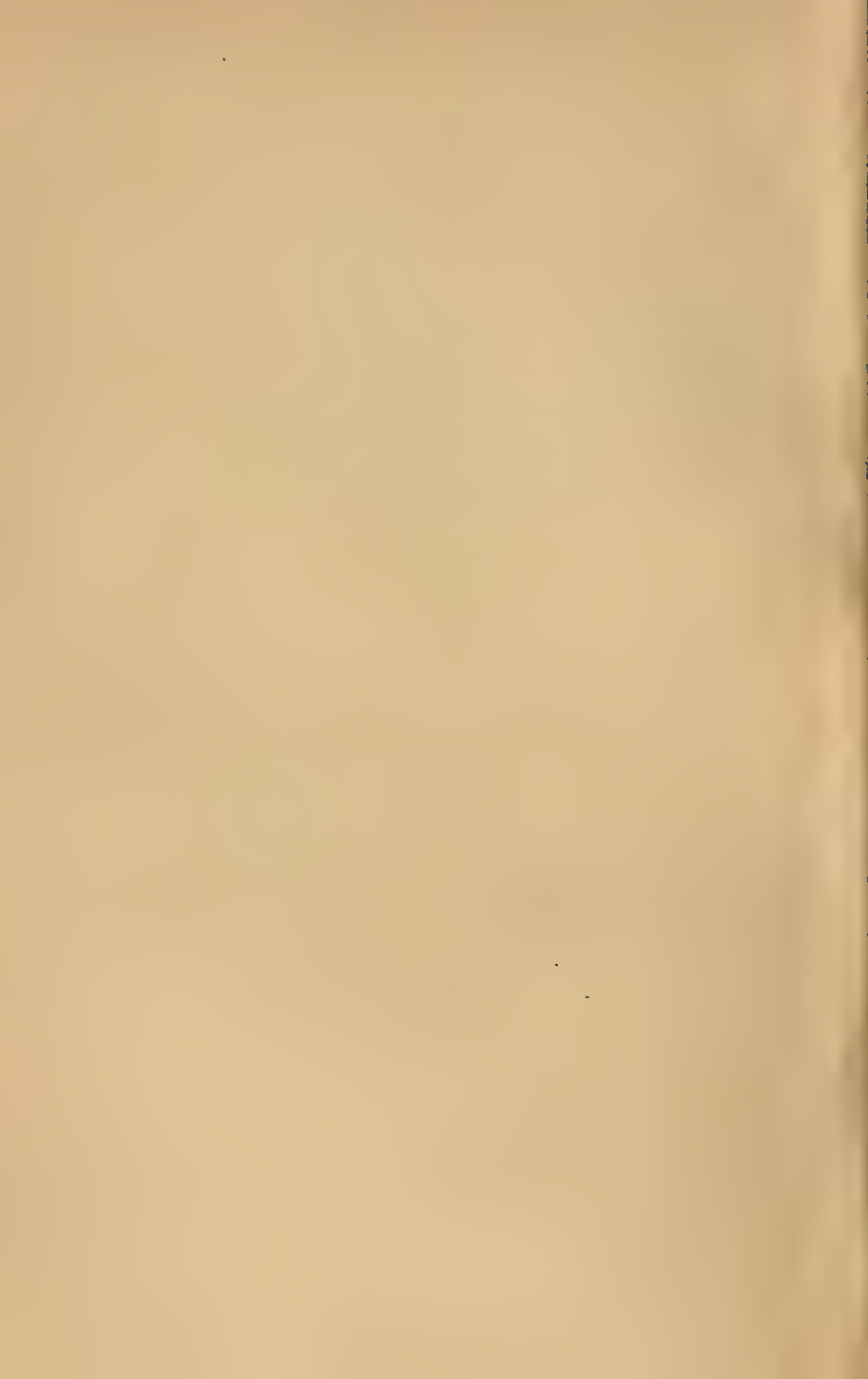
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EDITOR'S INTRODUCTION

A BOOK dealing with the principles of teaching is by no means new, for since the beginning of the modern movements in philosophy of education with John Dewey as its leader and in educational psychology under Thorndike, numerous books with this title have appeared. But psychology has undergone a marked change, and many assumptions formerly regarded as principles of teaching are no longer valid. Sociology, moreover, has come forward as a science to insist that social factors, such as the situations in the social background of the child, be taken into account in the formulation of the school program and in the teaching process. Most of the books on the principles of teaching are, therefore, outmoded by these newer scientific developments. The justification of a new book must be found in the extent to which it takes account of the recent development in psychology and sociology and the degree to which it utilizes the recent scientific developments in the restatement of the principles of teaching.

E. GEORGE PAYNE



The Principles
of
Teaching



INTRODUCTION

PRINCIPLES: THEIR NATURE AND IMPORTANCE

IT SEEMS fair to assume that a work on principles should attempt to point out those principles which are involved, and not merely deal with current problems of theory and practice. On this assumption the present volume has been written. Before beginning the discussion proper it is thought best to give a brief explanation of the sense in which the word "principle" is employed in this book. It is quite apparent that educational science has been retarded by the indiscriminate use of terms. Accordingly the author has attempted to employ the terms as he thinks they should be employed, although the usage may not always accord with current practice. Various terms are defined and illustrated in the text, but our present purpose is to indicate the sense in which we refer to principles of teaching.

WHAT IS A PRINCIPLE?

Differentiation of terms. A principle is a basic general truth. The word is derived from the Latin word *principium*, which signifies "source," "foundation," "beginning," "a fundamental truth," or "that from which anything proceeds." In the interest of exact terminology a distinction should be made in the use of the following words: fact, truth, assumption, hypothesis, theory, principle, and law. In common

usage the word "fact" is synonymous with truth and principle. In strict usage, however, a fact is that which is done, or accomplished. In this sense it is similar to the word "event." For example, on April 6, 1917, the congress of the United States declared a state of war to exist between the United States and the Imperial German government. The word "truth" refers to an ideal or concept, and is therefore more general than the word "fact." In speaking of a statement or proposition we should employ the adjectives "true" or "false" to indicate whether the proposition accords with truth. The statement that all men are mortal is *true*; it is a *fact* that President Lincoln was assassinated. It is *true* that a penny and a feather fall at the same speed in a vacuum, and it is a *fact* that Galileo by dropping from the leaning tower of Pisa objects of unequal weight disproved the assumption that the rate at which a body falls depends upon its weight.

The word "assumption" has broad connotations. An assumption may be a postulate or something taken for granted for the sake of argument. Or it may be something taken for granted because it is axiomatic or self-evident. A hypothesis is a tentative explanation of observed phenomena, especially in the early stages of investigation. When further evidence is acquired and the explanation seems more nearly correct, the term "theory" is applied. The "atomic theory" of matter and the "germ theory" of disease are examples.

Laws and principles represent the more advanced stages of investigation. We may properly speak of the principle of gravitation, whereby every particle of matter is attracted by every other particle. This principle is accepted as such because of the abundance of evidence in support of it through universal observation and demonstration. Law is usually

synonymous with principle, although in more strict usage a natural law is a quantitative or mathematical formulation based upon a principle. For example, one of the laws of falling bodies is expressed in this manner: $S = \frac{1}{2} gt^2$. Thus a law is more definite and specific than a principle, although laws rest upon principles. Some writers speak of laws of learning, but perhaps the word "principles" should be employed in such cases. As used in this book the word "principle" refers to a basic general truth; that is, a truth which applies widely and can be used as a basis for procedures in teaching and learning. An illustration is the principle of self-activity, that is, a person learns by his own effort or response, and not by the effort of others. On the basis of this principle a teacher must provide suitable learning activities and teaching procedures.

Permanency of principles. Principles are not developed or manufactured; they exist. We discover some of the principles operating in nature, while others escape our observation and remain undiscovered. But principles operate whether we discover and observe them or not. The principle of gravitation existed long before man thought of it as such. Newton's laws of motion are merely *expressions* of relationships which previously existed in nature. Man's quest for the secrets of nature is a search for the principles which operate in the natural world. Every invention or discovery in the realm of science is characterized by new insights into these basic principles. On the other hand, a failure to proceed in accordance with nature's principles, for example in health, is certain to lead us astray.

Although principles themselves are permanent, it should be emphasized that man's conception of them is subject to

frequent change. A clear conception of a principle must precede, or at least accompany, an adequate statement of the principle. Evidently there are stages in man's dealings with principles. He may be aware of the existence of a principle which is only vaguely understood and which can not yet be correctly formulated. His language or terminology employed in speaking of the principle will change from time to time as new light is discovered. Man's ability, therefore, to understand principles, to formulate them in words, and to apply them will grow and develop. Also conditions and materials with which man deals change frequently; these may usually be changed by man at his pleasure; but nature's principles are not subject to such change.

CLASSES OF PRINCIPLES

Each field of investigation or branch of knowledge rests upon fundamental principles. There are principles of chemistry, principles of medicine, law, government, economics, geography, physics, and so on. Principles of chemistry are essential to that science but do not apply in economics. Success in any field of investigation, therefore, depends upon the discovery and observance of the principles operating within that particular realm.

Also within each special field there are principles which operate in the entire field, and others which have a limited scope of application. In chemistry, for example, there are specific principles which relate to certain phases of this subject, such as gases, solids, acids, bases, and salts. Then there are principles having a wider scope of application such as those governing the relationship of all the elements to one another and their arrangement in a system.

In teaching and learning the distinction is also quite clear. There are general principles of teaching, such as the principle of apperception, which operate in all instances of learning and teaching. Then we have very definite principles of teaching handwriting, spelling, reading, and other specific subjects. That is, these specific principles operate in the restricted areas of teaching and learning.

IMPORTANCE OF PRINCIPLES

Too often students in professional courses have learned by instruction and observation little more than a list of things to do in certain situations without acquiring an understanding of why the things should be done. No reputable professional school approves of this type of training. Medical schools, for example, do not desire to turn out practitioners with a bag of tricks or recipes to apply when a given set of symptoms is discovered. On the other hand they seek to make the young physician intelligent and rational with respect to medical science and the practice of medicine. This is accomplished by grasping the basic principles of the science as they relate to the human organism, its diseases, and their treatment.

The profession of teaching needs professionally minded men and women, not mere practitioners of a traditional art. Their position and their type of service in society demand depth of understanding to meet the issues which constantly arise. Almost every hour, emergency situations arise in the classroom which vitally concern the future career and welfare of one or more children. Expert, technical advice is needed just as in the professions of law and medicine. In such cases no ready-made recipe is at hand. There is no book

to consult; a decision must be made at once. It is imperative, therefore, that the teacher remain close to the fundamental truths underlying his profession.

The teacher must be not only intelligent but rational. The efficient teacher knows why he does what he does. When a problem situation is encountered he is able to make an analysis or diagnosis and prescribe a course of action. He is a person who knows what to do in perplexing situations in the classroom without recourse to the note book which he kept in the professional school. Such rational behavior is made possible by an understanding of the principles of teaching and learning, when considered in their broadest aspects, inasmuch as these form a basis for correct judgment and rational procedure. Those who are charged with the education of teachers have the tremendous responsibility of giving them a broad scientific training. A narrow vocational training, however intensive and efficient it may be, can never fit one for the profession of teaching under modern conditions.

KNOWLEDGE OF PRINCIPLES LIMITED

Although remarkable progress has been made in the development of a science of education, it must be admitted that our knowledge of principles is quite limited. These limitations are not peculiar to the field of educational science; we have scarcely begun to discover the principles underlying the phenomena in all fields of human activity. States and nations grapple with serious problems in economics, trying this formula and that, often with little or no success because their fundamental knowledge is limited. Problems of health, disease, and general social welfare are ever before

us, but the basic principles upon which the ultimate solutions must rest seem to elude the investigators.

Within the last century research workers in the field of teaching and learning have discovered many useful principles. These are relatively few, however, compared to those which are yet to be known. Many problems remain unsolved because we are ignorant of the fundamentals. Moreover some of the assumptions and generalizations which we term principles may prove to be false after further investigation, but it is nevertheless encouraging to see many of them verified day by day under ordinary classroom conditions. It seems easy to describe proper procedures in teaching and learning, but it is not so easy to explain why they are proper. We know that they work, but we are not always aware of the guiding principles involved. For example, we know that the skill subjects require much practice, but we are not at all agreed as to what happens to the individual during the practice periods. Much fundamental research is needed to make teachers more rational, especially in regard to such topics as the nature of the learner, the nature of society, and the objectives of general education. With a keen awareness of the limitations of our knowledge of fundamental principles, the author has set forth in this book a body of principles which it is hoped will in a measure advance the cause of teaching in the direction of the desirable objectives.

CHAPTER I

THE NATURE AND PURPOSE OF TEACHING

EDUCATION AND SOCIAL CONTINUITY

EVEN in a simple, primitive society there exists a conscious need of preserving the ideals or culture of the group. The members of each group consider their culture important and worthy of being transmitted to subsequent generations, however insignificant it may seem to us. Such a felt need usually results in some form of education as a means of insuring the continuity of the group. Children are not born with skills, knowledge, or culture of any kind, but they must in some way acquire these if the wisdom of the group is to be preserved from one generation to another.

In primitive society the teaching function is not so important as in modern life. It is performed largely by the parents and by tribal chieftains. The boys learn from their fathers the arts of hunting and fishing and other methods of obtaining food. They learn also the various practical arts and skills necessary under a handicraft system. The girls learn from their mothers to cook food, make clothing, care for children, and perform other domestic services. In addition to these informal types of education, there are the tribal initiation ceremonies. They are formal occasions on which the youth are inducted with impressive ceremonies into the ways of thinking and acting approved by the group.

They may last for days or weeks, in order that the youth may be duly impressed with the authority of the elders and with the knowledge and mysteries of life. Thus by means of parental teaching and by initiation ceremonies the cultural heritage, such as it is, is preserved and passed on to the next generation of people, who in turn inaugurate desired changes before imposing this accumulated heritage upon their descendants. Other minorities, such as foreigners who may enter the group, are also required to conform, thus producing the desired group solidarity.

Modern social groups likewise seek to preserve and promote their accumulated wisdom. Since they believe they have something worthy of being preserved and propagated, their aims are not essentially different from those of primitive societies. All social groups seem to seek solidarity and social continuity. There is a significant difference, however, between the methods and achievements of primitive and modern man. This difference is found in the cultural institutions which modern man has developed. Civilized society seeks not merely social continuity and the maintenance of the *status quo*. It has a desire to make social progress and to enrich human life by raising it to a higher ethical and intellectual level. Furthermore modern society has the institutional means of accomplishing these objectives.

What are these cultural institutions? What are the means or instruments established to promote social cooperation in the interest of all concerned? First in importance are the language arts—speaking, writing, and reading. These enable the members of one generation not only to work together for the common good, but also to transmit to remote generations in written form their accumulated wisdom. By

these means one generation begins not in savagery but with the recorded wisdom of the preceding ages. In this way progress is made possible. The invention of a number system is another of the instruments of social cooperation, making possible our development in science, industry, and commerce. As a result of these intellectual instruments society can foster institutions of another type. These are the home, the state, the churches, and the school. These societies have become the depositories of ideals, knowledge, and the wisdom of the preceding ages.

In the course of time society has thus accumulated an enormous store of knowledge, ideals, skills, arts, literature, science, and philosophy. Since this vast culture cannot be inherited biologically, it must be preserved and transmitted by some form of social cooperation. If it should fail to be transmitted, then each generation would have to begin where the last began, and progress in culture would become impossible. Each particular group, whether home, nation, or church, must provide for its own perpetuity. It is in view of these truths that some have defined education as a process whereby society attempts to achieve and maintain its ideals and culture. On the other hand, education may refer to growth in the individual by the processes of learning as distinguished from physical growth. It matters little which point of view is emphasized, since both processes have the same end in view, namely, the welfare of the individual.

THE UNIQUE POSITION OF THE TEACHER

Between the vast cultural heritage of the centuries and the rising generation stands the teacher. His position is one of honor, trust, and responsibility. Young people are indeed the

heirs of all the ages, but they must have an effective means of appropriating this heritage, or making it truly their own. In primitive society there is of course very little heritage to transmit, but in modern, complex society simple initiation ceremonies and oral communication by incidental associations are no longer adequate. A step above the primitive level is the apprenticeship system whereby one learns a trade or vocation by observing and associating with a "master" long enough to become an independent worker. This system also has proved inadequate under conditions of modern civilization. It is not only wasteful but can never give the basic education needed today.

It is at this juncture that the modern school arises with the responsibility of education delegated to specialists—the teachers. The teacher, as a selected representative of the culture of the race, is society's chosen guide for the youth of the land. Whether the teacher represents directly a city, a state, a church, or any other aggregation of individuals, his task is essentially the same. Perhaps no other position in society involves greater potentialities or graver responsibilities. The teacher can lead plastic childhood along the road to the jungle or up the road to individual efficiency and social intelligence towards the highest achievements known to the race. Other groups of society contribute much to a child's education and must continue to share a large part of this responsibility, but in recent years the school has been required to assume many functions once performed by the homes and even the churches. In the truest sense, then, the teacher is a social worker, performing one of the most important functions of the social group.

In order to magnify the importance of the teacher's func-

tions, let it be emphatically stated that the teacher has more to do than merely "let the children learn." There is a false conception abroad in the land to the effect that children can best be educated by a process of natural unfolding of powers supposed to be hidden within. This doctrine assumes that the child's natural inclinations are towards the ideal, the good, and the true; that his motives are pure and that he has an innate craving to be educated.

These assumptions are not supported by psychology or by common sense. There is no biological craving or biological need for education; it is altogether social and must be socially acquired. It is inconceivable that any one could ever be socialized by an individualizing process. There must be expert guidance by one who is educated and sufficiently mature to anticipate the common needs of the younger generation. The teacher, therefore, must point the way, create new and higher interests, and acquaint youth with that which society has found to be tried and true throughout the ages.

TEACHING AS A PROFESSION

Public school teaching is a function of government on the professional level. It is the only one of the higher professions to be socialized; that is, the only one whose members are paid by the state and not directly by the people served. This fact should suggest two things to prospective teachers: (1) teaching is a position of public trust; and (2) every effort should be made to secure the best possible professional education and training. Teaching is not merely a job; it deals with human personalities at the most crucial period of life. One of the purposes of this book is to impress the reader with the dignity and importance of teaching and to indicate in a

measure the price one must pay in order to become a worthy member of the profession. A teacher should not merely belong to the profession; he should seek to contribute to its improvement.

TEACHING GOVERNED BY PRINCIPLES

Little argument is needed to convince one that the physical sciences operate according to well-established principles. The chemist would not dare mix, heat, or handle chemicals without regard for the principles governing that science. The more he knows the more careful he becomes. The electrician can not succeed and work in safety unless he has a very definite knowledge of the principles of electricity. Machines of all types are constructed and operated in accordance with the principles of mechanics. The physician makes his diagnosis and prescribes a treatment in accordance with the well-established principles in the basic sciences.

Effective teaching likewise rests upon basic principles. These are none too well known at the present time, but remarkable progress is being made by modern methods of investigation. When we discover by observation and investigation that certain modes of procedure fail while others always succeed, we are convinced that a principle is operating. It is easy to observe that one mode of mental procedure works in a given situation but fails completely to bring results in another. One pupil learns easily while another can not learn certain things at all. So it is with an indefinite number of classroom experiences. Our experimental and laboratory techniques in education have enabled us to discover the basic general truths which explain these phenomena sufficiently to afford a working basis for correct teach-

ing procedures. Being thus convinced that teaching is governed by principles, the professionally minded teacher will find a new incentive to try to discover for himself just what these are.

THE DEMANDS OF SYSTEMATIC TEACHING

In any given classroom the teaching may be so aimless and haphazard as to be totally ineffective, or even injurious. On the other hand, a desirable classroom performance in which exists the highest educational efficiency is what we shall call systematic teaching. Assuming that the prospective teacher already has a broad cultural education, we may point out what will be required of him in order to meet the demands of systematic teaching. The reader will observe that the matters here mentioned constitute the main outline or framework of this book. A more detailed analysis of the topics, therefore, will be found in the succeeding chapters.

An efficient, systematic teacher may be described by answering three questions: (1) What kind of a person is he? (2) What does he know? and (3) What can he do? In the first place the teacher himself should have achieved the objectives which he desires to accomplish in others. Especially should he be a person of worthy personal and social ideals and of more than average native capacity. Assuming for our present purposes that the teacher meets the requirements as to personality, let us state briefly what he should know. In addition to being educated generally, the teacher needs a professional education—an acquaintance with the science of education. In general he should know why he does what he does. If he merely does what is customary or what he has been told to do, he is hardly worthy of membership in the

profession. In particular he should know the nature of education, the characteristics of the learner, and the psychology of learning. The key to the understanding of these is found in the principles which underlie teaching and learning.

In answer to our last question it may be stated that whatever the teacher does should be rational, that is, there should be a justification in the light of the particular principles applying to each situation. He should be able to guide intelligently, to stimulate learning activities, and to appraise learning all along the way. A degree of expertness is expected of every teacher. This expertness will be manifested in his clarity of vision respecting educational objectives, in providing appropriate and challenging learning situations, in understanding and directing learning activities, and in determining when the desirable objectives have been achieved in the learners. In brief, his operative technique will be worthy of a dignified member of the profession. Systematic teaching demands more than "school-keeping"; it requires both knowledge and skill; it is at the same time an art and a science.

TEACHING VERSUS LESSON-HEARING

Systematic teaching requires more than assigning and hearing lessons. An illustration will help make the matter clear. The writer has before him at this moment a book bearing the title *Primary History of the United States*, which he used many years ago. It is open at chapter XXVI, which is entitled "End of War—Formation of the Union." At the end of the chapter are sixteen questions on details of information plainly recorded in the chapter. For example, "Where did Cornwallis go from North Carolina?" The answer

given in the text is "Virginia." This chapter was a day's "lesson," assigned by simply saying, "Take the next chapter for tomorrow." The pupils came next day and tried to "recite." There were usually two variations in procedure. One was for the teacher with book in hand to ask the questions recorded in the book and have the pupils answer with books closed. Another was to ask each pupil to stand and recite what he had learned about a particular paragraph. (There were seven paragraphs in this chapter, the first being "Surrender of Cornwallis.") We simply learned what the book said and recited this practically all from memory. It was not uncommon then for teachers to "hear" lessons.

From this illustration of lesson-learning and lesson-hearing many things are obvious. The chapter is merely a series of facts or events in chronological order. These were to be "learned." There was no fundamental understanding to be gained, no unit or significant aspect of history around which a pupil's thoughts could cling to form a permanent attitude of any kind. We simply prepared the "lesson" for the day. It seldom remained a part of us any longer than a day. Obviously this kind of procedure resulted in little more than a memory content. This wrong method of learning history resulted inevitably in the wrong educational products.

If the reader is inclined to think that such procedure is unknown today, he is badly mistaken. Many teachers are slaves to textbooks on all levels of the school system. To them the essence of school teaching is to assign parts of a book and have the text reproduced in class. On examinations they think the pupil deserves a high mark who can say it "just as the text says it." This is pure lesson-learning and lesson-hearing. In spelling, for example, many teachers still

"assign" a column or two of words to be "learned" at home at night and "recited" or spelled at school next day. Also in arithmetic the pupils struggle with rules and problems much like the ciphering system of the seventeenth century which in no sense could be called teaching. And so with other subjects; under such practice the day is filled with the routine of assigning and hearing lessons. This is not efficient, systematic teaching; it is not teaching at all.

Lesson-hearing is reflected in the attitudes of pupils. It tends to give the learner the impression that education is nothing more than covering a required amount of material or spending so many hours in school. He has been encouraged in this error by the abuse of school marks and credit units, which when accumulated to a certain quantity are often supposed to amount to an education. Both teacher and pupil thus deceived may easily mistake mere lesson-learning for genuine learning. Other attendant errors in lesson-learning include the tendency to work for the teacher, to cram to pass examinations, or to meet some other extraneous requirement. Frequently under such a scheme, especially in the upper grades and in high school, a pupil will inquire, "Are we expected to know this?" or "Will we be held responsible for that?" These remarks are sure signs of the attitudes which have been described. Such students are merely meeting minimum requirements; they are not thinking in terms of desirable inner changes. Stated in other words, lesson-hearing is merely a process of assigning lessons and testing by means of a "recitation" to see that the lessons have been learned. Such a conception is degrading to the profession of teaching. The teacher's real function is to lead pupils to higher planes of efficiency than they can possibly

achieve through crude and inefficient methods which they discover for themselves. Pupils need to be taught how to learn effectively, and the teacher must actually supervise these processes of growth.

TEACHING VERSUS PROPAGANDA

Teaching must deal with the truth in so far as this is known; it must not drop to the low level of propaganda. Many pseudo educators are employing clever devices and schemes to "educate" the public. So insidious are certain commercial advertisers and patent-medicine vendors that they are often mistaken for social missionaries. Their statements may be quite true, but their suggestions and insinuations leave the wrong impression upon an uncritical public. Many enterprises of this kind are under the guise of peace, patriotism, or even religion. Militarism, for example, often stalks under the slogan of "preparedness for peace." Peace day has been celebrated with parades featuring military uniforms, rifles, and bayonets, which speak to youth in accents louder than those of the peace orator. Psychologically, an Armistice Day may actually amount to an armament day. Strangely enough the public too often naively accepts the psychology of it as if performing a patriotic duty. Seasons of war furnish a rich field for propaganda of all kinds. Those who delight in profiteering from war are adept in the invention of challenging phrases, such as "national honor," "protecting American citizens," or "freedom of the seas." Propaganda spreads easily among people who are credulous or disgruntled. A half-truth is readily accepted if emphasized or featured in an attractive manner.

No one, not even the school, escapes the tremendous im-

part of such propaganda. The school must contend with all varieties from tooth-paste campaigns to the compulsory saluting of the American flag. Instead of fostering propaganda movements, it seems that teachers should acquaint pupils with the proper methods of detecting the sinister motives of those who take advantage of innocent people. Even teachers may easily become guilty of spreading propaganda of their own in the classroom. The most subtle form of this error is accomplished by deliberate omission of certain facts and by unwarranted emphasis upon certain others. In this case only the truth is taught, but by omitting certain truths and featuring others the teacher may promote a doctrine which is purely partisan, if not sinister. This is deliberate propaganda, but of course a teacher may become an innocent victim of this traffic. He may inherit socially a certain bias without being aware of it, for example, by being in a family which is strongly prejudiced or by reading only one partisan newspaper. As a public servant the teacher is obligated to promote the truth and not to resort to underhanded methods to promote some doctrine or political theory which is detrimental to the community or national welfare.

THE DEFINITION OF TEACHING

The word "teaching" as employed in this book refers to the part played by the teacher in the education of the child. It alludes to *the deliberate efforts of a more mature person to induce mental growth in a less mature person. In brief it is causing another to learn.* Since education involves changes in an individual, one may define teaching as *inducing desirable changes in another person.* There is no teaching without learning, but obviously there can be learning with-

out teaching. When left alone a child learns from different experiences in his exploration of the world. The teacher, however, arranges new and challenging situations, provides a rich, cultural environment, awakens new interests, and helps the child to avoid the errors and distractions of an unguided life. This selected, refined, and graduated environment provides the experiences necessary for the education of the child.

The definitions given above indicate that there are various situations even outside the schoolroom in which teaching occurs. The minister, the physician, the lawyer, the parents, and others are constantly doing some teaching. In the present work, however, the field is limited to the schoolroom situation. The principles of teaching are the same, however, regardless of the place or the purpose of the teaching.

Teaching may be for good or for evil. Perverse teachings can lead to efficiency in antisocial activity and hence defeat the purposes of society. On the contrary, teaching may lead to the development of a character who is a good citizen and a cultural asset to the community. It is in the latter sense that the term is applied in this book.

In this chapter only a general description of the nature and purpose of teaching has been attempted. In the remainder of the book will be found a more detailed treatment of the principles which govern effective teaching. After the other chapters have been read it will be well to return to this chapter for a second consideration. A comprehensive grasp of the entire book as an integrated line of thought should serve to enrich and deepen one's concept of the nature of teaching and of the importance of the teacher in our society. Good teachers are eager to fulfill their true functions.

SUMMARY

The main arguments presented in this chapter are summarized in the following list of principles.

1. Education is essential to group solidarity and social continuity.

- (a) In primitive life these objectives are accomplished by parental teachings and by tribal initiation ceremonies.
- (b) In modern life the school is an institution of society, and teachers as specialists are required.

2. The teacher as a specially chosen guide occupies a unique position between the culture of the race and the rising generation. The teacher is, therefore, society's ambassador to the next generation.

3. Public school teaching is a function of government on the professional level.

4. Effective, systematic teaching rests upon basic principles. Procedures are valid just to the extent that they conform to principles.

5. Systematic teaching, or high efficiency in the classroom, requires in general:

- (a) that a teacher be a person of worthy personal and social ideals and of more than average mental capacity;
- (b) a clarity of vision regarding educational objectives;
- (c) an understanding of the nature of the learner;
- (d) an understanding of the nature of learning;
- (e) the ability to guide pupils intelligently;
- (f) the ability to stimulate learning activity;
- (g) the ability to appraise learning.

6. Systematic teaching requires more than assigning and hearing lessons.

7. Teaching must deal with the truth; it should not be propaganda.

8. Teaching may be defined as the process of deliberately inducing mental growth in another, or causing another to learn.

EXERCISES

1. Make a list of the things which you think can be satisfactorily learned without the aid of the school.

2. Why has it been necessary for the modern school to take over many functions once performed by the home and by other social groups?

3. What should be the qualifications of one who is chosen to represent the culture of the United States? Answer by a detailed, written statement.

4. Can you account for the recent rise in the cultural and professional standards for teachers?

5. Write a paragraph in which you distinguish between a profession and a mere job or occupation.

6. Think of the best teacher you ever had. List the characteristics which you think made this teacher's work effective.

7. Were you ever a victim of lesson-hearing? If so, describe your experiences.

8. In this chapter you were told to be cautious about propaganda. Does this mean that a teacher must have no opinions of his own and belong to no church or political organization?

9. Imagine that you were asked and required to take charge of a grade room today and begin teaching. What do you think would be your greatest weaknesses or shortcomings as a teacher?

10. Select from your readings several definitions of teaching

and make an evaluation of each. As a final exercise formulate a definition of your own.

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CHAPTER II

EDUCATIONAL OBJECTIVES

THE NATURE OF OBJECTIVES

THE aims or objectives in education are not ends in the sense of a finished journey. That is, they are not points or positions at which a learner arrives in his race for an education. It is better to think of objectives as traits, characteristics, or phases of a mature personality. These may be skills, attitudes, abilities, tastes, ideals, interests, understandings, or appreciations, or they may be the outward purposes which these inner traits serve, such as health and citizenship. Objectives are attainable; they should not be thought of as remote ideals which exist only in the imagination without ever being attained. The true objectives in education are learnings which are registered in the individual's personality organization; they are not merely subject matter or memory content. For example, an objective in language is the ability, habit, and disposition to use correct language in conversation and in writing. If a person knows grammar and correct language usage but has not made these a part of his habitual speech, the objective has not been attained; it has not registered as a part of his personality organization. Health knowledge, or information about the laws of health, has value, but this is not the same as hygienic living as a matter of habit or routine. Moral knowledge and ethical judgment do not satisfy the demands of the aims in moral character.

Knowledge must in some way be translated into attitudes and action.

CURRENT INTEREST IN OBJECTIVES

Before the rise of modern science in the sixteenth century, the objectives in education were taken for granted in most institutions in western Europe. There were no apparent efforts made to determine a curriculum on a rational basis. To the Renaissance scholar the pagan classics of Greece and Rome were at first a means to culture, and later an end in themselves under narrow humanism. Linguistic efficiency coupled with classical erudition soon constituted the chief end in education for that group. The mind was thereby "disciplined" to perform the tasks of life. In Christian, or "would-be" Christian circles religious indoctrination was the legitimate aim. In certain ecclesiastical quarters the scholar was finished or polished by scholastic disputations regarding metaphysical questions. The disciplines supposedly attained by both the divinities (divine literature) and the humanities (worldly classics) were axiomatic and remained without serious challenge till the middle of the nineteenth century.

During the nineteenth century innumerable advances occurred in many fields of science. In particular the changes in the physical and the biological sciences brought a kind of revolution in the types of thinking and the methods of investigation. The religious aims and the classical tradition thus received their first great challenge. Science, or at least scientific method, made notable gains in prestige. In 1860 Herbert Spencer set forth his views regarding the legitimate objectives in education, perhaps the first serious effort to formulate objectives in concise form. As a consequence of

this period of agitation, science forced itself into the curriculum of colleges and secondary schools in general. According to Spencer's theory, science could contribute to the attainment of worthy objectives which were completely neglected under the classical regime prevalent in his day.

The net outcome of the arguments relative to the merits of science and of the more recent classical investigations into the merits of the classical languages and literature has been to raise to a prominent position the whole question of objectives. The influx of science into the program of studies produced the elective system; this in turn raised the question of values and the legitimate objectives in each course in the program. If there were to be electives, then the problem was to determine which courses were to be elective and which required.

The coming of standardized, objective tests and measures in the twentieth century threw much light upon the question of objectives. Many aims previously taken for granted were not being attained, and were not even desirable. More and more the schools have been seeking to give an educational account of themselves. Thus the interest continues, and the problem is considered a serious one. The tests have not indicated the objectives, but they have helped make us conscious that clearly defined objectives are desirable. They have disillusioned certain teachers who thought they were teaching something quite different from what the tests revealed.

BASIC ASSUMPTIONS

Although many of the assumptions of this discussion are merely implied, it may be well to give expression to some

of them at the beginning. For present purposes it may be assumed that education is desirable, and that all people—men and women, boys and girls—alike need a common education. They need to grow up to intellectual, social, and moral maturity by learning, so that they can live in a common society. This period we shall call general education. In this connection it may be assumed also that the education of most people will be secured in organized institutions of learning. In fact the function of the school seems to be the accomplishment of those learning objectives which are not satisfied by other social agencies. In primitive life the demands upon a person are not so exacting, and regular schools are deemed unnecessary, whereas in a complex society individual initiative and even the apprenticeship system must be supplemented by group enterprises such as the school. In attempting to determine the extent of this residual function of the schools, there is a growing tendency to take over functions which in all probability should be performed by other agencies.

It is further assumed that the objectives in general education can be fairly well known in advance. Many people exhibit confusion and distorted thinking when they argue that a child should be left alone to follow his own inclinations, on the assumption that no one can foresee his needs. This so-called "progressive" school of thought implies that teachers are blind guides and do not know what education is. This situation is like that of a tourist without a destination, or a football player with no knowledge of where the goal is located.

In this discussion it is assumed that general education is different from training for the trades and the professions.

Many curriculum problems and other difficulties have arisen because of a lack of discrimination between these types of objectives. Learning the skills and techniques of a vocation is not the same as growing a personality. When these distinctions are clearly understood, there exists less confusion as to what type of school or curriculum a young person shall enter.

Current educational writings exhibit curious conceptions of the nature of basic principles. One writer will pretend to discuss "principles of teaching in the elementary school," another "principles of teaching in the secondary school," and so on, as if to say that these two schools exist in different worlds. The implied assumption is that memorizing poetry, for example, would be a different process on the secondary level from what it would be in elementary grades. One had as well speak of a principle of gravitation for the elementary school and one for the high school; or a language for the grades and another for the high school. It is assumed in this discussion that principles of learning and teaching are the same for all levels; the difference lies in procedures and in materials used. The principles herein set forth are intended primarily for the teacher in the elementary grades, but they are by no means confined to this level of education.

THE OBJECTIVES OF GENERAL EDUCATION

The meaning of general education. Doubtless the primary purpose of a public school is to provide facilities whereby each boy and girl of the community may secure a general education. Just what constitutes a general education is still a matter for some discussion. As used in this connection it

refers to that education which every person should have regardless of race, sex, location, or occupation. It concerns the growth of the individual into a rational personality capable of functioning on a higher level of experience, and responsive to the finer things of life. The truth about human nature, about human association, and the natural world is everywhere the same. Moreover, the truth about the invisible, intangible world is the same everywhere, but it is not so well known. Since education deals with these truths, it follows that true education can become a definite concept applicable to all people in all ages and places.

The confusion which has prevailed in educational circles regarding the aims in education arises from the limited vision of educators. It has been the practice for many years to judge a person's needs by standards of contemporaneous society. The Greek ideal of a liberal education as that worthy of a free man is obsolete because the old Greek society is no more. May we not expect that our educational ideal will pass with our society unless it can find a basis in genuine, permanent values?

Our problem for general education is to produce a person whose knowledge, attitudes, abilities, skills, and sense of value will be a source of satisfaction within and a means of meeting life situations without. This person will not be merely trained for a petty occupation in a transient society, but will become such an individual as will be competent to judge what is wise and best and able to live respectably and happily in any society. True education is good in and of itself, apart from economic values. The truly educated are not lonely and bored with themselves. They do not have to be entertained every moment by others. In general it may

be said that the emptier one's head and heart, the more must be supplied from without to make one happy.

When the true content of general education is fully known, there will be no electives. The elective system in the field of general education is an admission that educators do not know what true education is. The elective system has a rightful place, and that place is in the vocations and the higher professions. Electives were forced upon schools and colleges in the nineteenth century when a deluge of new subjects came into the curriculum. It is high time that the quantitative concept of education along with the cumulative credit system be abolished in favor of an integrated personality which gives evidences of education.

General objectives in the elementary school. If we think in terms of a functioning personality, rather than in terms of traditional school subjects, the problem seems simpler. Most beginning teachers have been so schooled in the quantitative conception of education that they inevitably think in terms of pages to be covered or problems solved. They confuse program of studies and curriculum content. To finish a book becomes synonymous with attainment of the objectives. It is a poor builder indeed whose constant attention is on his tools and materials rather than on the blueprint.

The first and perhaps the chief task of the elementary school pupil is the acquisition of some facility in the use of the primary tools of knowledge. These are language efficiency, reading ability, writing efficiency, quantitative concepts, and number facility. Without these a person is about as helpless as a carpenter without his tools. These elementary tools are the keys which unlock the storehouse of knowledge, because they are the means which society has employed

for achieving and maintaining its civilization. These are absolutely essential to life in our society, in fact in all civilized societies, and therefore can not be optional.

The next primary objective is a measure of development of the value attitudes, which are discussed at length in a later chapter. These include, first, a knowledge of approved social usages and a disposition to observe them in practice. Among these usages are social etiquette, elementary ethics, and moral conduct. Stated more specifically they include the ideals of honesty, altruism, fair play, loyalty to truth, patriotism, honor, cooperation, temperance, and others. These primary ideals are of course merely begun at this level, but it is highly important that they become established modes of response early in school life; their full significance will become evident to the learner later. The value attitudes include also the ability and the disposition to recognize worth in all the fields of culture. Appreciation of all the master works in art, music, literature, philosophy, and religion can now be advanced to a new high level in the elementary school by means of modern school facilities. The teacher may not expect to see these objectives fully accomplished on the elementary level, but the foundations must be laid and their importance impressed upon the youth.

A third group of objectives may be designated an acquaintance with the physical world in which one lives. Certain primary laws of health must be known and habitually observed. These pertain to the mental health as well as to the physical. A knowledge of useful facts about the physical world and a fair acquaintance with nature's ways and laws are appropriate objectives for the elementary school. The child lives in a world of scientific inventions and appliances

which cannot be ignored in his earlier years. Most of his learning in this field will be only useful information and inhibitions, with a minimum of rational analysis. In the ordinary processes of living the learner should become intelligent to an extent commensurate with his level of maturity. In learning to cope with the natural environment in these important respects the study of geography and elementary science will be found helpful.

A fourth group of objectives relates to a primary understanding of human society, or the social world in which one lives. Heretofore the schools in general have attempted to achieve these objectives through a formal study of history and civics. These subjects have been so specialized, however, that many of the obviously desirable objectives on the elementary level have not been accomplished. It should be said, however, that the newer courses in community civics are decidedly superior to the older courses in "civil government," which approached the subject through an analytical, deductive procedure. The customary techniques and specialized subject matter of courses in history limit the usefulness of this subject in achieving the purposes of the elementary school.

Obviously there exists a need for an integration of all the social studies. Many attempts are now being made to construct a social science curriculum which will give the elementary school pupil that degree of understanding of society necessary in general education. In accordance with this trend there are now appearing various integrated textbooks which are quite hopeful. Through properly integrated subject matter and meaningful experiences the learner can make progress towards an integration of personality.

This new line of attack upon the problem will doubtless produce positive results of much value. In the first place, orientation will be afforded the pupil in his social world. One does not experience the world as so many facts of history or geography, but rather in terms of people and their activities in attempting to conquer the world. For example, such activities as are described in the story of writing, the story of numbers, or the story of language are indispensable to an understanding of present-day society. A second element in this approach from meaningful wholes is interest. Immediately the course of study becomes significant to the learner and thus stimulates the desire to become better acquainted with his world. This type of curriculum is also in accord with the purpose of general education. Such an integrated curriculum makes a sharp distinction between the objectives of general education and those of the specialized courses in higher institutions. Whatever may be the type of course organization adopted, the objectives must be kept clear; the pupil must have an acquaintance with and an appreciation of his social world. To accomplish these ends there must be broad, comprehensive units of study, thus affording a knowledge of the processes by which society has made its cultural advances.

General objectives on the secondary level. Secondary education refers to the latter period of general education. In our system this period comes between the elementary school and the specialized and professional schools of the university. Not all secondary education, however, belongs in the field of general education, which is needed by all irrespective of their residence and vocation. For example, foreign languages and formal geometry and algebra probably have no

place in a scheme of general education, but point rather to specialization and the professions.

What are the accomplishments which all should have somewhat alike on the secondary level? Perhaps the first task is to repair, sharpen, and extend the elementary tools of knowledge, previously acquired. They, in being extended, must take on a new significance through use in the solution of human problems. They now become a means of intellectual growth. Language becomes a mode of mental procedure. Writing becomes a means of thought and study in connection with the mastery of composition and practical logic. While formal mathematics is not included, number concepts nevertheless are enlarged through practical mathematics and organized into a system of precise thinking, tending to promote orientation in a world of quantitative relationships. Thus to some extent the primary tools of knowledge become higher tools of thought.

With these improved instruments the learner can now explore the vast fields of knowledge which are essential to his education. From this study and under proper guidance the student should accomplish at least five worthy aims. The first of these is a variety of higher interests, with one or two rather consuming interests. One may perchance find continuous satisfaction in the realm of music and art. Some phase of literature or science may prove most alluring. But whatever the special interests may be, they will not prevent the student from developing and perpetuating substantial interest in all of the other phases of human culture. One of the surest signs of an educated man is the depth and variety of his worthy interests.

The second aim is social intelligence. The secondary

school in the United States is largely a socializing agency, but it is weak in its efforts to produce a socially intelligent citizen. The citizen must understand the nature and purpose of social groups, whether they be political, social, economic, or religious. A critical, enlightened attitude, free from prejudice, is necessary to discover weaknesses in the social structure, to detect motives, and to guard against propaganda and the various types of public exploitation. Social intelligence includes a broadened consciousness, a wider outlook upon the life of a modern society. To be engrossed wholly in one's petty, local affairs is to hinder one's education as well as impede social progress.

The useful knowledge about the physical world gained in the elementary school is hardly sufficient on a level where people begin to assume more responsibilities in life. It is not enough to be intelligent about one's physical environment; one must now be rational. This objective involves an understanding of the basic laws and principles operating in the natural world. This insight into the fundamental principles of science in general should be sufficient to act as a prophylactic against pseudo science with all of its various forms of quackery. Of course it is not expected that every one can make the necessary tests and analyses to differentiate the genuine from the spurious, but at least one should be able to know when expert technical assistance is needed and where to find it.

A fourth aim is self-dependence. The elementary school pupil requires close supervision and constant guidance. He expects to be told specifically what to do, and he should be, to a great extent. But as the learner matures he must learn to stand alone. The competency of an individual to manage

himself, to assume responsibility, and to work voluntarily is one of the best proofs of readiness to begin higher professional training in a university. Motivation should cease to be a problem at this stage. If the pupil's education has been properly guided, certain major interests will arise and the learner will become permanently motivated, making totally unnecessary any of the forms of artificial motivation. One who must be constantly urged and coaxed to do intellectual work is hardly prepared either for the life of a citizen or for higher education.

The fifth general objective of the secondary level in general education is a higher sense of values. Although this topic is considered at length in another chapter, it should be pointed out here that general education must provide one with the ability and the disposition to recognize and to choose the good and the true in life; to separate the wheat from the chaff; to discern the temporal and the permanent values; to discover the real issues of life; and to avoid the counterfeit on every hand. In brief, a general education should prepare one to live acceptably in our society, or in any civilized society, and to do the things necessary to preserve and to promote basic cultural institutions.

These values are not taught as intellectual content or bits of information. The objectives are attained in this respect when a person has been produced who senses, so to speak, the higher values. He has taste and discernment in literature, in art, in music, and in manners and morals. He is not so gullible and suggestible as to be led astray by every wind of political doctrine or economic hypothesis. He has balance, poise, discernment. He is responsive to the good things of life. He is educated.

TYPES OF OBJECTIVES

Having considered the general characteristics of educational objectives, let us attempt to classify aims as psychic changes in the learner and the outer purposes which these changes serve. In other words these two classes may be called immediate and ultimate objectives. The teacher should always be conscious of the ultimate, social purposes while he is seeking to bring about the fundamental inner changes. It is not enough merely to urge the young learner to become a good citizen; certain specific mental changes must be wrought in the child before he can become an efficient citizen.

Objectives as inner changes. The changes here referred to include, among others, habits, skills, ideals, interests, tastes, attitudes, arbitrary associations, understandings, and appreciations. Day by day the teacher seeks to guide in the attainment of these objectives by providing appropriate pupil-activities. Habit refers to an acquired mode of response which varies little from time to time, and it may be almost or altogether unconscious. An example would be the habit of beginning at the upper, left side of a page to read or to look at a series of pictures. The skills differ from habits in that skills require conscious effort and close concentration of attention. Habits function without much variation, while skills may vary much from time to time. Handwriting and drawing are examples of skills; also performance upon a musical instrument. Ideals include such virtues as honor, fair play, altruism, cooperation, and temperance. To be interested is to be concerned with something. To feel that something matters, that it concerns us, is to be interested in that thing. The character of one's interests suggests the

character of one's education. Tastes may be manifested in manners, dress, speech, choice of literature, music, and in many other ways. These indicate refinement. An attitude is a bent or disposition. As a rule attitudes are socially conditioned; they serve to indicate one's philosophy of life. Arbitrary associations are well illustrated in spelling. Letters are associated in a conventional order to form the word, and the word is associated with an idea, object, or meaning. Knowing that Washington was the first president of the United States is another example. There is no logic about it; merely an association is formed arbitrarily. Understanding involves the grasping of principles, causes, and relationships. Appreciation is the capacity and disposition to recognize values when they are encountered. It is the highest function of an educated man.

It is already apparent to the reader that one single school subject may contribute towards the attainment of one or more of these objectives. Music, for example, involves the skills of singing or playing musical instruments, tastes in the choice of music, arbitrary associations in learning the symbolism of musical writing, and appreciation of the masterpieces of music. Let it be emphasized that in order to be genuine these changes must function as integral parts of a personality. For example, knowledge of physiology and hygiene is not the same as hygienic living. Knowledge of grammar is not the same as habitual use of good speech.

Objectives as outer purposes. The drudgery and boredom often experienced by the elementary school teacher will decrease to a great extent if he grasps the significance of his task. Learning to read or write seems long and tedious unless one can visualize the importance of these tools in the

affairs of life. To adults who have them they are prize possessions. What would a man accept in exchange for his ability to read or to calculate and think quantitatively? These psychological changes are the foundation and the guarantee of the realization of those worthy purposes which are now to be described.

Herbert Spencer (1820–1903) in the mid-nineteenth century attempted to specify the objectives of education. In the first of his essays, published under the title, *Education*, he raises the question as to what knowledge is of most worth. He answers the question as follows: *

To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of any educational course is, to judge in what degree it discharges such function.

Spencer lists in order of value the worthy objectives of education as follows: †

1. Those activities which directly minister to self-preservation;
2. Those activities which, by securing the necessities of life, indirectly minister to self-preservation; (these are vocational);
3. Those activities which have for their end the rearing and discipline of offspring;
4. Those activities which are involved in the maintenance of proper social and political relations;
5. Those miscellaneous activities which make up the leisure part of life, devoted to the gratification of the tastes and feelings.

Spencer's list of objectives stood out in bold relief against the narrow, classical book-learning of his day. The formalism

* Herbert Spencer, *Education*, p. 12.

† *Ibid.*, p. 13.

which had persisted till his day had kept youth in ignorance of their physical and social environment, thus denying them what Spencer called an education for practical, complete living.

In 1918 a committee of the National Education Association reported and recommended a list of seven objectives under the title of "Cardinal Principles of Secondary Education." The seven objectives were, *

- Health
- Command of the fundamental processes
- Worthy home membership
- Vocation
- Citizenship
- Worthy use of leisure
- Ethical character.

All of these except "Vocation" apply to the elementary school as well as to the secondary. The usefulness of this list is limited because of its generality, or lack of specific activities which constitute efficiency in these various fields of activity.

Another significant effort was made by Franklin Bobbitt. His list of ten major objectives or life activities are as follows: †

1. Language activities; social intercommunication
2. Health activities
3. Citizenship activities
4. General social activities
5. Spare-time activities
6. Keeping one's self mentally fit
7. Religious activities

* United States Bureau of Education, *Bulletin*, 1918, No. 35. Washington: Government Printing Office, 1918.

† Franklin Bobbitt, *How To Make a Curriculum*, p. 8.

8. Parental activities, the upbringing of children, the maintenance of a proper home life
9. Unspecialized or non-vocational practical activities
10. The labors of one's calling.

Bobbitt's contribution lies in his clarification of the specific abilities, skills, or attitudes which must be possessed in order to attain the major purposes in life. A good citizen is not judged by what he thinks, feels, or knows, but by his activities. Bobbitt proceeds to make an analysis of the specific knowledge, habits, skills, attitudes, and dispositions which constitute these major objectives. He definitely links the psychic changes with the life purposes which they are to serve. To be a good citizen, for example, one must be able to read, to write, to think, to evaluate, and so on. Coupled with his ability a citizen must also have the disposition to do the things which the best citizens do. In other words, all of the inner changes which were previously described, and many others, are the constituent elements of these major objectives of life, though they are not always so recognized by the learner at the time.

When examined together, the three lists of objectives previously quoted seem reducible to three groups; (1) activities relating chiefly to one's self—individual efficiency; (2) activities affecting one's fellow-men—social efficiency; and (3) activities pertaining to one's relationship to God—religious or spiritual efficiency. While these general objectives are unquestionably the ultimate aims of education, yet they can be realized by the learner only by giving close attention to the development of those specific, psychological changes which have been previously described.

The problem of integration. However worthy may be the

objectives which have been discussed up to this point, there exists the danger that they may be viewed as so many separate learnings or achievements. In other words, the attention may be focused upon the subject matter rather than upon the persons being taught. A list of objectives, such as Spencer's or the others quoted, is prone to be merely a description of current philosophy, or worse than that it may be a sort of justification of present-day practice.

Obviously there is needed some integrating principle to give the various objectives meaning and justification. The western world for two centuries has been trying to believe that democracy is that principle. In the United States we tend to feel that our form of society is the best yet evolved and that it will be permanent. On every side the watchword is "education for democracy," but the definition of democracy is not so easy to find. We are even willing to make the individual subservient to the social group because we believe our society is correct. Education for democracy does sound feasible, but we may be too close to our ideals and practices to see their weaknesses. Even the greatest dictators of the day make bold to say that they are the greatest democrats in the world! Perhaps the democratic argument is a form of rationalization or justification of what we are already doing. One thing seems certain; true education, when it is finally discovered, will not be a servant of any form of society; it will transcend all forms of society and geographical areas. It will even transcend time. It will be seen to be different from propaganda.

In recent times there has sprung up a renewal of the Grecian ideal in a new setting. According to this school of thought the integrating principle is a well-rounded personal-

ity. This conception presents many perplexing problems. In the first place personality is a difficult concept to define or analyze. Those who accept the word find themselves in hopeless disagreement as to how to attain it. Some would follow the native tendencies of the learner and let him develop in a natural environment. Others would build into the fabric of personality the current social concepts and ideals. The one would be a natural man; the other would be made to order. A most hopeful phase of this concept, however, is that it recognizes the importance of growth and the integration of the organism.

It seems to the writer that the safest integrating principle is the recognition of permanent values. Stated in other terms, it is truth which must be the rallying point, the ultimate standard of reference. Any policy which rests upon mere expediency or upon opinion and tradition can not long endure. The things which are true are the things of value. Many of these are known, and others could be determined by the right kind of analysis of history. The true values, the eternal verities of life, are always good; they are not confined to any age, location, form of society, or race. But how are we to select the values which shall be sought in general education? The answer is that they will be selected in the same manner and with the same scientific technique that other objectives are sought. If we were selecting the traits which constitute an expert stenographer it would not be wise to draw them from one's imagination. It would be better to look for agreement of significant traits and values in all of the *best* stenographers available. Great men and women have lived in every age known to history; their names are known to some extent. What are the things which they

had in common? What values did they cherish? (Including ideals, abilities, knowledge, tastes, attitudes, interests, and so on). Something is needed to extricate us from the wiles of sheer expediency. We need something to give us orientation in time; something to offset the evil influences of materialism; something to awaken us to a recognition of permanent values.

A good kind of history would help the matter of integration, but a history of wars and politics would not be profitable. A thorough study of biography, if it could be made without bias, would be a revelation. The classics are the finest ideals of the ages; they should be important clues in the search for the good, the true, the durable. The true values, when found, will be a prophylactic against the fads and even the philosophy of any group of people in any age. If the accumulated social experiences of the human race have nothing to tell us, no verdict to render regarding values, then it must be admitted that little can be expected from the so-called "creative education" of today.

SOME QUESTIONABLE OBJECTIVES

Formal discipline. At the close of the Middle Ages when the various vernacular languages began to gain some prominence in Europe, Latin as a practical language lost much of the dominant position which it had held during the mediaeval centuries. Scholars succeeded in maintaining Latin in the school, however, on the ground that it disciplined the mind in some formal manner, just as formal physical exercises strengthen muscles of the body for general use. The doctrine of course rested upon the theory that the mind consists of discrete faculties which are subject to formal train-

ing. It was believed, for example, that if a person exercised his memory on any kind of material, his memory would thus be trained and become efficient in remembering any other kind of material as well. On the basis of this erroneous psychology many educators have set up objectives and constructed programs of studies. Some of the errors of this type of atomistic psychology are pointed out in a later chapter.

The information fallacy. Education is commonly confused with information or erudition. Pupils learn much about literature without acquiring the basic interests, tastes, and appreciations necessary to real culture. In science they are prone to gather facts without the grasp of fundamental principles and insights necessary to become intelligent about the subject. Likewise in history there may be encyclopedic knowledge without any understanding of the development of human associations. The elementary schools of today are most guilty of this erudition fallacy. Struggling with an overcrowded curriculum, teachers spend much of the day attempting to teach facts and more facts about every conceivable subject which they as adults know about, on the assumption that these are things which children ought to know. While trying to cram the memory with this body of unrelated and unusable facts, there is a growing neglect of the very things which are needed to make children rational with respect to a world of facts.

Knowledge is not education; it is only one source of education. Food is not growth; it is merely one condition of growth. True education does require much information, and rightly so, but a merely informed man cannot be considered educated. Information is a legitimate objective, but

alone it is not sufficient. In popular speech one hears often about book learning versus common sense. Where such a charge applies, one has secured only information or erudition; the books have been wrongly used as an end and not a means. It is not the business of the schools to give pupils all the knowledge they will need. The average person in the course of a lifetime will acquire more facts out of school than in school. Educators must try to make pupils intelligent and rational so that they can make the best of life and rightly deal with facts and values.

Conformity, or adaptation. Conformity to social usage is desirable to an extent, but passive adherence to and acceptance of the *status quo* is to be condemned. Progress for the individual and for society demands a critical examination and evaluation of life conditions and situations, and a resolution to improve them. This often means not conformity but transformity. Many refer to education as adaptation to one's environment in the sense that one becomes able to cope with life conditions. This definition is valid but suggests a defensive attitude. We need masters of the environment who can move forward toward greater physical and social achievement.

Often a political state rises and demands a conformity to the petty whims and distorted ambitions of rulers of the state. In such a totalitarian state the identity of the individual is lost, and the only virtue required is obedience or conformity to the plan or program. Where individuals and educational institutions are thus restricted, the objectives of real education can hardly be realized.

Education for the present. Keen controversy has arisen over such phrases as "education for adult life," "education as

preparation for life," "education as life," "cold-storage education," and others. One group argues that the educator must anticipate the future and try to prepare pupils for it. The other group says that the child's present needs must be met, and the future will take care of itself. As usual there is some merit to both sides of the argument. This controversy reveals confusion regarding the meaning of education. Some confuse information with education. Of course it is absurd to try to store in memory a vast amount of information in the hope that it might perchance be of use on some occasion. Committing to memory the duties and salaries of members of the federal House of Representatives is an example.

Strictly speaking, however, all education is for the future, that is, for times and occasions not yet experienced. The present is largely a myth, so short as to be immeasurable. Let us examine the activities of the elementary school children with reference to adult life. We do not employ or teach a child's language, but a language which the child will use all of his life. There is no child's writing system, or number system, but he must use the same systems used by adults. Also the same set of ideals and social usages are employed and taught in the first grade as are expected to function in adult life. Science and history must necessarily be adapted to the child's level, but there is no such thing as children's science or history, or adult's either, for that matter. Education is growing up by learning, and the function of the school is to promote the proper growth of those who are now and will continue to be members of society. The alert, efficient teacher will be quick to detect fallacies and will strive to eradicate them from the profession.

SUMMARY OF PRINCIPLES

Some of the most important principles which have been discussed in this chapter are summarized below.

1. The true objectives in education are learnings which are registered in the individual's personality organization; they are not merely subject matter or memory content.

2. The objectives may be classified as inner changes, and outer purposes which these changes serve.

(a) Inner changes, or psychological outcomes, include habits, skills, arbitrary associations; knowledge, insights, understandings; ideals, tastes, interests, attitudes, and appreciations.

(b) Outer purposes, or sociological outcomes, include

(1) individual efficiency—activities relating chiefly to one's self;

(2) social efficiency—activities affecting one's fellow-men;

(3) religious or spiritual efficiency—activities pertaining to one's relationship to God.

3. The objectives of general education should be clearly differentiated from those of occupational training.

(a) The objectives of general education are essentially the same for all people regardless of occupation or location.

(b) Objectives in the occupations vary according to the type of occupation; the elementary school is not directly concerned with these objectives.

4. When the true content of general education is fully known, there will be no elective courses, because all need a basic common education.

5. The major objectives in the elementary school are:

- (a) the acquisition of some facility in the use of the primary tools of knowledge—language facility, reading ability, writing efficiency, quantitative concepts, and number facility;
- (b) the development of the value attitudes, including social usages, conduct attitudes, ideals, tastes, interests, and appreciations;
- (c) an acquaintance with the physical world in which one lives;
- (d) a primary understanding of human society or the social world in which one lives.

6. The objectives of general education on the secondary school level include:

- (a) the repairing, sharpening, and extending of the primary tools of knowledge so that they become modes of mental procedure;
- (b) social intelligence, or a mature understanding of the nature and function of social groups;
- (c) an understanding of the basic laws and principles operating in the natural world, or an insight into the fundamental principles of science;
- (d) a measure of self-dependence, or competency to manage one's self;
- (e) a higher sense of values, or appreciation of the finest things of life.

7. In order that the objectives may not become a group of discrete, isolated learnings, some principle of integration should be recognized.

- (a) Democracy and personality are two principles which some writers have suggested. Democracy, however, has not yet been generally accepted as a principle, and personality is an ill-defined individual concept.
- (b) Probably the best integrating principle is the recognition and adoption of permanent values, many of which are already known and universally accepted.

8. In educational history many spurious or questionable objectives have been set up. These include:

- (a) formal discipline;
- (b) erudition, or the information fallacy;
- (c) mere conformity or adaptation;
- (d) education for the present.

EXERCISES

1. What is Franklin Bobbitt's method of discovering the objectives appropriate for general education? Consider his book, *How To Make a Curriculum*.

2. Explain the difference between a curriculum and a program of studies.

3. From a history of education list the subjects taught in elementary schools before 1775 and those which have been added later. Which group is more essential to one's general education?

4. Discuss the statement that "we need an education for a changing world."

5. Assuming that good citizenship is an ultimate objective of true education, make a list of the specific things which a good citizen does.

6. To what extent and in what ways can the elementary school undertake to educate for citizenship?

7. Recall your experiences in the grade school and in high

school. Were you required to do things which cannot be justified in the light of legitimate objectives?

8. If economic conditions should force elementary and high schools to eliminate one third of the courses or subjects now offered, which should these be?

9. What ground is there for the belief that a study of mathematics affords a higher type of intellectual experience than does the study of manual arts or home economics?

10. Outline what you consider should be a common curriculum for both boys and girls in the public school. What program of studies do you recommend in order to achieve these objectives?

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CHAPTER III

CHARACTERISTICS OF THE LEARNER

SYSTEMATIC teaching requires not only a knowledge and understanding of the persons to be taught, but also the social environment in which the learners acquire their basic patterns of response. Attempts to explain the behavior of children on the basis of the instinct hypothesis have not been successful. On the contrary, the most typically human behavior is explicable in terms of the cultural institutions of the society with which the children are immediately concerned. As explained elsewhere, these include language, a number system, customs, ideals, homes, churches, schools, governments, and many other means of social cooperation.

Each individual is the product of two factors or forces, heredity and environment, or nature and nurture. In order to understand the learner, therefore, it is necessary to think of him in terms of biological heredity and social heredity. The process of transmitting characteristics from one generation to another by means of the germ plasm is known as biological heredity. The process by which ideals, knowledge, customs, language, and general culture are transmitted is called social heredity. As a result of these two processes, school children possess many traits in common, while at the same time they manifest wide individual differences. Attention will be directed first to those characteristics which learn-

ers possess somewhat in common, and then to the significant differences which directly or indirectly concern the teacher.

THE COMMON HERITAGE

Most writers exaggerate the importance of individual differences and underestimate the significance of the common heritage. The traits, the characteristics, the ideals, the interests, and the intellectual tools which children possess in common make possible the "common school." An analysis of these common characteristics reveals that some are inherited biologically and others are acquired through social inheritance.

Common biological traits. The most obvious points of resemblance are of course the physical structures. While no two individuals are exactly alike, yet they all have the same organs and structures which are needed in education. All possess a type of body and a general stature which vary only within certain limits. This makes possible the use of one general type of desk, blackboard, pencil, book, and classroom. Each child has a nervous system capable of extensive development. All alike have the central nervous system consisting of the brain and spinal cord, together with the system of paired nerves extending to the various parts of the body. All have the autonomic nervous system which controls or enervates the visceral region of the body. The nervous system is capable of direct stimulation from the outside world through various sense organs. These produce visual, auditory, olfactory, tactual, gustatory, kinesthetic, thermal, organic, and static sensations or sensory experiences. Thus the organism communicates with the environment. The response mechanisms possessed in common are the muscles,

glands, and the cortical cells of the cerebrum. These are the mechanisms of behavior.

A common organ of tremendous importance is the brain or cerebrum, the organ of adaptation. In the human individual the cerebrum is fallow at birth, whereas in the lower animals it is practically a closed system. That is, the animals manifest only a limited possibility of psychological adaptation. Theirs is chiefly a structural adaptation. The human being is unique in his capacity to organize and integrate experiences on a rational basis through an ever increasing refinement of the cerebral functions. Learning possibilities are not the same for all individuals, but all normal persons are capable of approximately the same general types of response. The extremely modifiable cerebrum, as an organ of adaptation and integration, makes possible a child's education. Animals at birth or shortly thereafter are capable of doing many acts which human beings require months or years to perform. But the learning possibilities of animals are so limited that even the highest apes cannot be compared with the human child in the performance of higher mental operations.

As civilization advances and knowledge and culture increase, the period of human infancy is necessarily prolonged. Animals need no extensive period of infancy, because they live in a relatively static world void of culture. Since their adaptations are mainly structural, their needs are essentially the same in the jungle as in the midst of civilization. Their need for learning, therefore, is extremely limited. But the human infant, instead of being a bundle of inherited adjustments, is a dynamo of possibilities. He has very few native adjustments, but his capacity for making rational adjust-

ments in an intellectual world is literally amazing. Strangely enough, man is both a cause and a result of social advance. The more complex society becomes, the greater become the demands upon the individual member, because the streams of culture are ever widening. Thus the period of infancy is prolonged and the day of maturity postponed.

The human hand and arm are specially adapted for various types of learning. The four fingers and the opposing thumb make man the only creature who can become adept in holding a pen in writing. Animals can never acquire much facility in manipulating instruments. This characteristic of the human hand makes possible the finer techniques in the use of delicate tools or instruments of every description. Examples of these may be seen in the office of the dentist, the surgeon, the watch maker, and in many types of industry. The arrangement of the human arm is significant. Its length, its free and easy movement in so many directions is of tremendous advantage in the arts, the trades, and the sports. Even the structure of the human foot is not without educational significance. The upright posture of man is of advantage in making him an aspiring, social creature. The feet are very useful in such performances as playing the pipe organ, driving an automobile, and in the operation of various other machines. These physical features of man, taken together with the vast learning capacity which he possesses, make possible a common program of instruction in the public school.

Apart from the structural characteristics there are common, basic needs or drives. The actual needs of human beings are about the same for all people. These include food, water, air, rest, activity, protection, and companionship.

Some think of these in terms of drives, urges, or basic tendencies. Fundamentally a person possesses two types of urges or drives, the individual and the racial. Individual urges are hunger and protection. All experience these, but in somewhat varying degrees. These two drives tend to preserve the individual by calling forth the necessary activity, either in securing food or in defending the body from attack. The tendency to protect one's self is so potent that some have referred to self-protection as the first law of life. The tendency is manifested from earliest infancy to the end of life. Even the courts justify killing in self-defense. The sense of hunger is a felt positive need. This sense of need is not confined to food, but embraces a felt need for comfort, companionship, recreation, intellectual activity, or even for spiritual food.

In addition to the two individual urges, namely hunger and protection, there is an urge which functions in the preservation of the race. This racial urge is summed up in the word sex. Some writers, notably the Freudian psychologists, have ascribed to the sex motive most of human activity, while others tend to minimize its importance. Not only is the sex motive a basis for the family and parental activities, it is well known that many of the nominally social activities of adolescents are merely outlets for the sexual urge. At any rate, this drive is sufficiently strong to continue the reproduction of the race and to perpetuate the corresponding types of parental activities. A person can never extricate himself from the power of these three urges. He may acquire new interests and higher motives, but in the final analysis and under the stress of circumstances these three fundamental drives will prove to be prepotent. In other

words, culture tends to break down or to be shed as one sheds a coat, when these drives are at stake. The problem of motivation of all children, therefore, must find some basis in these common characteristics.

In the common heritage of children may be found also reaction patterns which are termed emotional tendencies. Experimental investigation reveals three basic reaction tendencies: fear, rage, and love. Infants seem to manifest these almost immediately after birth without having had any chance to learn them. Infants are afraid of falling as shown by sudden removal of support. They are afraid of loud noises also. Other fears seem to be acquired. Infants exhibit rage when their movements are hampered in any way. Love is the word used to describe the joyful response to caressing, petting, or gently tickling. These three inherited patterns are soon modified by environmental circumstances by a process of learning and conditioning. As explained in another connection, emotions are not to be considered as separate reactions, but merely as the subjective phase of situations in which the organism seeks adjustment with respect to incompatible goals.

The various races of man exhibit certain striking differences, notably color. But in spite of their variations, their differences are insignificant in comparison with their likenesses. The differences among the members of any race are greater than the differences between the races. Perhaps there is, after all, no such thing as a pure race, biologically. To say the least, the human body and also human nature are essentially the same everywhere.

Common social heritage. Society and civilization maintain a continuity by transmitting to succeeding generations

the means of culture. The degree to which each individual appropriates this heritage differs, but none can escape the consequences of the process. One of the most potent items in this inheritance is language, which is treated more in detail in another connection. The child within a few months after birth begins to understand language and by age two or three has acquired a fair command of simple speech. At school age he can employ language as an instrument of intellectual growth. Although acquired socially, language is marvelously uniform in any community or social group. Little change in language occurs within a generation. Thus language is the chief means of socializing the individual and promoting group uniformity. As a common trait, therefore, language is indispensable in the educative processes.

A system of writing makes possible the preservation of knowledge, so that it may be transmitted from place to place and from generation to generation. Writing is a social invention employed for social cooperation; it is at the same time a part of the social heritage and a means of transmitting this culture to future generations. Since the system of writing is common to a social group, the educator has a uniform basis upon which to build the educational program. The importance of written materials in the education of today is well known to every one.

All learners alike inherit a number system and the many measuring devices developed from this system. If each learner employed his own number system and standards of measurement and weight, the educational processes would be difficult and in some cases impossible. Teaching is a social undertaking, and must, therefore, employ the most effective means of social cooperation. A common number

system enables people to devise calendars, clocks, and other instruments to meet social demands. Although language, writing, and numbers are merely instrumental, they enable a society through its schools to promote and maintain its ideals, customs, knowledge, and general culture. Children are not born with this heritage but receive it on a common basis by virtue of being born into a social group.

Another type of common inheritance is in the form of ideals, attitudes, customs, mores, beliefs, and ways of thinking. We are accustomed to say *our* constitution, *our* government, *our* ideals, because the success of our government depends upon these. Just as there is only one language for children and for adults, so there is only one set of ideals. The same ideals which operate among individuals of a small group apply also in government and other social enterprises. Progress is made, therefore, not by emphasizing a learner's variation from the group, but by cultivating the higher mental processes in cooperating on a common basis. In fact no society is possible without a common basis in fundamental beliefs, attitudes, and ideals.

DIFFERENCES IN INHERITANCE

Apart from minor differences, such as stature, facial features, and color of eyes and hair, which do not affect learning, one finds remarkable differences among children of any given age or grade. Some of these differences are due to biological inheritance, and others have resulted from environmental conditions. The line of demarcation between the two factors is not always clear, but a close study of this question is profitable for the beginning teacher.

Differences in biological heritage. Perhaps the most con-

spicuous difference observed in children is their capacity to learn. This trait of course cannot be observed or measured directly, but it can be inferred from the learner's reaction to various learning situations. The investigations made by Professor Lewis M. Terman and others have demonstrated the vast range of significant differences among children with respect to mentality. A decade before Mr. Terman's important work, Alfred Binet in France had discovered that children differ more with respect to the higher mental processes than in the skills and other lower processes. On the basis of this principle he constructed the first intelligence scale, which has been a model for all other subsequent scales.

Within the twentieth century it has been pointed out that native capacity varies somewhat in accordance with a normal probability curve, indicating about an equal number of children below average and above average, the number decreasing as the extremes of the curve are approached. This range includes all capacities from the idiot class to the genius, there appearing about the same number in each corresponding group for unselected children. When the curve is divided into three groups, usually there are about 50 to 60 per cent in the middle group, and 20 to 25 per cent each in the lower and the higher groups. This middle group, or so-called normal group, can accomplish the ordinary school objectives in the allotted time and with comparative ease, while the other groups require more or less time and effort, as the case may be. An example of variability within a grade of children of about the same age may be illustrated by reference to an actual case. Below are given the intelligence quotients of an ordinary group of 36 children in the first grade of a public school.

144	124	118	105	95	80
135	123	115	104	93	79
134	123	111	103	93	77
132	121	111	101	89	76
131	121	108	101	86	76
131	120	107	97	86	70

These scores are supposed to be measures of brightness, being the ratio of mental age to chronological age. It will be observed that one sixth of them are in the very superior or "near genius" class, while one sixth of them are below 85, or in the very inferior group, one at least being on the border line of feeble-mindedness. The middle or "normal" group comprises almost 50 per cent of the total group. The range of abilities is even more marked in very large groups of children.

Some school systems devise administrative schemes to care for these differences. One plan is to have frequent promotions and thereby enable the brighter pupils to finish the public school course in less than the normal time. The most successful plan seems to be to keep the time element uniform for all pupils and vary the course of study. This plan has the advantage of keeping together those having similar social needs and interests. The middle group can pursue the regular course of study, the upper group can take an enriched course, while the lower 20 per cent will do only the minimum essentials for life in society. Under modern classroom procedures this plan may be used by each teacher, even in schools where no administrative plan is operated.

Certain variations among children are due to physical defects of one kind or another. These may be hereditary, but

they are often considered to be congenital, that is, they developed after the fertilization of the ovum. These defects may appear as blindness, deafness, or even word-blindness. Color blindness is thought to be hereditary. For our purposes all such organic defects may be considered a part of one's biological heritage, because they have not been consciously acquired by the individual in the processes of learning.

Mention should be made of the inheritance of special abilities, or talents. Much space in psychological literature is devoted to the arguments regarding the nature of intellectual ability. Many theories are offered, such as the two-factor theory, the one-factor theory, and the many-factor theory. None of these theories is entirely satisfactory, although all of them are useful in helping to define the problem of ability. Perhaps the most promising is the two-factor theory advocated by Professor Spearman, a British psychologist. The two factors are *G*, the *general factor*, and *S*, the *special factor*. The *G* is one's general fund of mental energy and is the common element found in tests of various specific functions. The factor *S* is the specific function as tested, such as pitch discrimination, number facility, or naming of opposites. For any individual, the *G* remains the same for any set of correlated abilities, but it varies from one individual to another. On the other hand, the *S* varies from one person to another and also from ability to ability in the same individual. One's ability, *A*, may be expressed, according to this theory, by the formula $G \text{ plus } S \text{ equals } A$. Ability in any special line is made possible by the operation of *G*. If one's *G* is high, that one may be expected to perform well in many fields. If the *G* is low but there is one *S* which is high, then the

person can do a high grade of performance in that one field but not in a different type of work.

This two-factor theory has the advantage of explaining more than the other theories. It accounts for the learner who seems very brilliant in one subject but dull in all others. This may be a case of a low *G* factor and a high *S* in that particular function in which he excels. The higher mental abilities tend to correlate with one another, but not with those on the lower level. For example, ability in mathematics correlates more closely with ability in science than either of these correlates with handwriting. Some progress has been made in measuring general ability, but investigations of special abilities have not been so fruitful. Music is perhaps an exception to this general statement.

Professor L. L. Thurstone after extensive research in the field of mental measurement has isolated what he terms the "prime elements of intelligence." His "seven dimensions" of intelligence are (1) number facility, (2) word fluency, (3) visualizing ability, (4) memory, (5) perceptual speed, (6) induction, and (7) verbal reasoning. These, he claims, are sufficiently distinct to be measurable. Individuals of course show wide variability when tested on these seven functions.

Certain personality traits are attributable to biological inheritance. Temperament may be placed in this class. Whatever terminology may be employed, it is evident even in smaller children that vast differences in temperament appear. Some are sanguineous, or bright and cheerful, full of life; others are quiet and even melancholy in appearance. These traits are not symptoms of health conditions in every case, because they appear in spite of the health of the individuals.

To some extent personality differences exist between the sexes. These are probably due to inherited differences in the nature and function of certain glands, and also to the differences of environment. Parents and people in general expect a certain type of behavior from girls and another from boys. Usually the environment and treatment accorded boys tend to make them a dominant group, while another type of treatment of girls induces submissiveness. Of course the inferior physical strength of women is a cause of difference in behavior. It seems that men are on the average about four inches taller and twenty to thirty pounds heavier than women.

Another trait which operates from childhood to old age is called introversion. One who is free from this tendency, or stands at the other end of the scale, is termed an extrovert. It is generally admitted that introversion is due chiefly to inhibitions built up by social circumstances and in some cases by physical defects. The restraints imposed by parents, by religious teachings, and by custom and conventionality tend to produce this trait in individuals. The same restraining influences, however, do not affect all people alike, and therefore we observe people with varying degrees of introversion.

The introvert tends to solve his problems under cover; that is, his psychological battles are fought in the innermost recesses of his own mind. He knows more than he tells, while the extrovert often tells more than he knows. The introvert is the type found most frequently among scholars and scientists, while pronounced extroverts are best suited for positions requiring the ability to meet and entertain people. The introvert is better suited for intricate, detailed work. As a rule the extrovert will be quicker to respond,

that is, his reaction time will usually be shorter. The premium for accuracy of details, however, will ordinarily go to the introvert.

In a discussion group or other classroom situation in which pupils respond informally and voluntarily, the extrovert is almost certain to speak first and most, unless the teacher understands and controls the situation. Extroversion is quite closely related to the traits of ascendancy and dominance, while introversion correlates with submissiveness, recessiveness, and reticency. In assigning tasks or places in all kinds of cooperative work in the school, it is well to study the children with respect to these characteristics. It is as difficult for some children to play some parts as it is for some adults to sell insurance. Furthermore, the fact that some children are slow to respond is not evidence that they are not learning, because some talk more than they think and others think more than they talk. Unless these differences are understood, great injustices may be done to a large percentage of children. Too often teachers have called this introvert type a case of timidity, assuming that it would disappear as soon as the child became acquainted.

Differences in social heritage. Much controversy resulted from the army intelligence tests conducted during the European war of 1914 to 1919. A group of psychologists developed the Army Mental Tests under the authority of the surgeon-general of the United States, and the tests were administered to more than 1,700,000 recruits. The results of these tests showed that the men from certain states ranked quite low, while those from other states made a high average rating. For all the states the range of scores was surprisingly great. From these data some inferred that the

natives of certain states were very low in native mentality and that other states produced citizens of a higher native capacity. Granting that the tests were valid and reliable, the inference seems to be justifiable. Having become suspicious of this type of interpretation, Professor William C. Bagley made a study of the social heritage and educational advantages of the men who were given the intelligence tests. This was done by a study of the social and educational conditions in the various states. In his study the states were all ranked as to the scores of their sons on the Army Mental Tests, then according to the efficiency of the school systems of the several states, including the length of term of school, money expended, and so on. He found a very significant correlation between the efficiency of the state school systems and the scores made on the mental tests, suggesting that the differences were due not to native mentality but to environmental conditions. It was found that the average mental age of the recruits was about thirteen. From this it was noised abroad that we are a nation of people thirteen years old mentally. To offset this contention, attention was called to the fact that we were at that time a nation of seventh graders, the average person having quit school at that level. These facts suggest the extent to which communities differ with respect to educational advantages and cultural background. The folkways, the customs, the cultural heritage vary from the most primitive to the most cultural. Being born into a cultural environment does not make one cultured, but such an inheritance is an important factor in determining what the individual will accomplish.

Similar differences are observed in the homes and families from which the children come. A child can be taken out of

a home, but it is difficult to get the home out of the child. Traditions, beliefs, attitudes, ideals, and language usages are among the things which constitute the social heritage, and it is reasonable to suppose that these will affect pupil accomplishment.

It should be pointed out that much of the child's heritage is desirable and much undesirable from the standpoint of the school. Part of the school program is, therefore, to counteract certain influences and to encourage others. All are familiar with the attitude of the early Puritans toward children. Their belief that children are inherently bad led to a program which suppressed and stifled the impulses which today are regarded as essential to education. In certain quarters the attitude persists that government is an evil to be resisted at all costs. It is not easy to develop social intelligence in children reared in such an environment. Then there is that tradition or perhaps form of prejudice known as sectional superiority. Such a feeling makes it difficult to arrive at truth and render justice in dealing with other sections of the country. Such a feeling is similar to the attitude of superiority towards another race and works against the principle of equal rights.

In each family there seem to be ingrained certain ideals which persist long after the family group is dissolved. Some of these are incompatible with social welfare. A striking example is narrow group loyalty, that is, the tendency to uphold one's family or favored group at the expense of all rights and justice of others. Clannishness of this kind is a real problem in our attempts to socialize the public school population. Curious notions of justice grow out of isolated homes. There is the feeling that all members of another

group are bad if only one goes astray. This is especially noticeable in political feuds and contests. Even the mob spirit arises out of such distorted conceptions of justice. The mob not only seeks the guilty party but all others who resist them or their illegal methods. In many centers justice is not thought of as a positive good meted out to a person, but as a deserved punishment. In some homes there exists the feeling that labor is degrading and unworthy of a "lady" or "gentleman." Children from such homes may experience difficulty in developing a fellowship with those who find it necessary to do manual labor and soil their hands.

It is hardly necessary to discuss at length the favorable side of the child's social heredity. The home usually instills into the child a sense of honesty and honor, as far as these ideals are understood. Moral standards, or at least moral traditions, are upheld and emphasized. In most homes there is a respect for law and order and a degree of appreciation of our land of freedom and opportunity. Ideals of religion, of personal relations, of temperance, and of citizenship in general are sponsored by the home. The home of course gives the child his language or mother tongue, which is after all one of the most important items in his social heritage.

The school receives its recruits from all types of families and walks of life. Regardless of what a child's social inheritance has been, when he enters school he brings along an apperceptive background which corresponds to the cultural and educational status of his immediate family. The educational program, therefore, must be a process of eradicating the undesirable heritage as well as cultivating the good and desirable.

DIFFERENCES IN ACCOMPLISHMENT

Not only do children differ as to their biological and social inheritance; they also exhibit vast differences in actual achievement. Inheritance may tell us what a child is capable of doing, but it can never tell us what he actually will do. Some of the factors and conditions causing these differences will now be considered.

Differences in extent of learning. Achievement in the school subjects depends upon one's responses to the situations of life. Being born into a rich social heritage is not enough; one must appropriate the inheritance. Although biological inheritance determines the limits of one's capacity to learn, it in no way guarantees that one will ever reach that capacity in actual accomplishment. The learner must have the disposition to strive for that achievement of which he is capable. Strictly speaking, no one is born a genius or intelligent, but one may be born capable of becoming intelligent, or even a genius. Because of arrested development of some kind, one may fall far short of these objectives. This is quite evident physically; one may be born capable of becoming a man or woman of normal size, but may fail to reach that stature by improper development.

The development of intelligence depends upon many factors. Assuming that one has inherited sufficient capacity, there are other conditions to be fulfilled. The environment must be favorable. The school room offers a refined environment, adapted to the particular level of the child's maturity. Expert guidance is afforded by those who understand child nature and the demands of society. Amid these surroundings it is easy and natural for children to make progress in the good and abundant life.

Mental growth is not without effort; every learner, therefore, is a worker. Educational work requires the skilful use of tools, just as any other kind of work does. Fortunately such psychological instruments are available for those who desire to work. The most useful of these is, doubtless, language, because it is employed almost constantly, not only in the classroom but in all situations in life. Language, whether oral or written, aids in organizing and clarifying the learner's thoughts. Growth in language efficiency is known to parallel closely one's intellectual growth in the public school. Reading is of course the receiving end of written language, and is one of the important tools. It enlarges one's sphere of thought and enables one to think the thoughts of the wisest of the ages, both past and present. Thus enriched, the learner is more capable of thinking and acting intelligently.

A third important tool in one's development is the number system. If properly taught, number concepts prepare one for precision in thought and in action. It is truly the language of science, and hence essential to one's educational advancement.

Accomplishment among children will evidently vary in accordance with the degree to which these and other tools of knowledge are mastered and employed. Progress in history and geography, for example, depends much upon one's ability to read or to use language. Success in science subjects is related to efficiency in numbers and also in language and reading. Considering all of the factors involved, the teacher may expect vast differences in the accomplishment of learners of any grade or age group. Even under rigid ability grouping, vast differences appear. Other fac-

tors affecting accomplishment are teaching ability, and the health, attitude, and emotional state of the learner.

It may be well to give concrete examples of actual differences of accomplishment among elementary school children. The numbers listed below represent grade equivalents in years and months of 39 children of a third grade as shown by a standardized achievement test.

4.9	4.3	3.6	3.4	3.1	2.6
4.8	4.3	3.6	3.4	3.1	2.6
4.7	4.1	3.6	3.4	2.9	2.6
4.7	4.0	3.6	3.3	2.8	2.6
4.4	3.9	3.5	3.3	2.8	
4.3	3.7	3.5	3.3	2.7	
4.3	3.6	3.4	3.2	2.7	

The test was administered in May, near the close of the school year. The figures represent the average rating which was computed from scores on tests in reading, dictation, and arithmetic. The reading test was on paragraph meaning and word meaning, and the arithmetic was on reasoning and computation. The scores here recorded are the grade placements based on the average score on the tests. For example, the 4.9 in the first column means that this child's performance was equal to that of a child in the ninth month of the fourth grade. In other words, this child's score indicates an achievement equal to one who is ready for the fifth grade. Nine members of the group, whose scores are below 3.0, are scarcely ready for the beginning of the third grade, according to this test. Only the upper ten children are fully prepared for the beginning fourth grade, while nineteen in the middle range have progressed to varying levels within the third grade.

Actual differences in accomplishment for any age or grade are more marked than teachers had ever imagined them to be before the coming of standardized, objective tests. In any ordinary school, no matter how well graded, it will be found that in certain subjects some children in the eighth grade will be well below the average for the sixth grade, and some in the sixth will be above the average for the eighth. Great overlapping will appear all through the grades. If sufficiently extensive tests are given to a large group of children of any grade or age group the scores will be distributed in a manner to resemble the normal probability curve, ranging from very low to very high scores, with a majority in the middle group.

While sex differences are negligible with respect to capacity to learn, as revealed by mental tests, they are quite noticeable in actual accomplishment, as shown by achievement tests. As a rule boys excel girls in subjects requiring reasoning, such as science and mathematics. Girls surpass boys in memorizing, in linguistic skills, and in sensori-motor coordinations. Interest is no doubt one of the prime causes of these sex differences, because there are noticeable exceptions among each sex with reference to accomplishment in all types of learning.

Differences in maturity. Obviously there are two phases of the process of becoming mature—the physical, and the educational or personal. In the lower animals physical maturity is attained much earlier than with human beings. The human child is for many years totally incapable of making his own way even in a physical world, and much longer is he helpless in the social world of today. Within a few days after leaving the egg shell, birds can fly and take care

of themselves. Certain of the animals reach physical maturity long before the human child can even walk.

It is generally assumed that girls mature sooner than boys, physically. Also within each sex there are different rates of progress towards maturity. At age thirteen, girls are taller and heavier than boys of that age, on the average. The two sexes are more nearly equal in height and weight at sixteen, and thereafter the boys exceed the girls in average height and weight. Girls are sexually mature at an earlier age than boys, the onset of puberty being from twelve to thirteen for girls and from thirteen to fourteen for boys, on the average. These differences and changes have been used as a basis for the separation of the sexes at this age in school and in scout work.

The differences in educational or mental maturity appear much more striking. One is mature who has attained self-dependence and can be trusted to guide his own affairs. Some reach this level long before the legal age of twenty-one, while others are quite immature at that age. It has been asserted by some investigators that the average age for "mental maturity" is about sixteen. Others say it is eighteen. The term "mental age" is rather vague, if not misleading, because it assumes mind to be an organ capable of growth comparable to the growth of the brain. Certainly the rate and efficiency of learning increase far beyond age eighteen, and do not decline perceptibly before forty.

It should be pointed out that different rates of intellectual maturity are manifested among children. The brightest children not only mature more rapidly, but they also reach a higher final level of intelligence. In other words, it requires dull children longer to reach their low level of maturity than

it does bright children to attain their high level. These facts have an important bearing upon the administration of the school curriculum and upon the teacher's attitude towards the various types of learners.

As culture accumulates, the period of human infancy, or dependence, increases. In primitive society individuals attain maturity much earlier than in civilized society. As soon as the savage becomes physically mature he is also educationally mature, because there exists for him no social heritage in the form of literature, science, or philosophy. In the early days of American life young men graduated from college and entered their vocations at an early age, even from sixteen to eighteen years. As our social and cultural heritage gradually increased, the span of formal school life was extended so that one is fortunate now who is settled in a vocation or profession before twenty-five or thirty. In fact the immaturity of high school and even college students is an ever-increasing administrative problem.

Children long before the age of six, and all through the grades, exhibit surprisingly different levels of maturity. One child of four will seem manly and independent, dressing and caring for himself. Another will continue to be a baby long after entering school. Some will become socialized long before others emerge from their primitive ways. In some cases these differences are doubtless due to home treatment of the child. In other cases it is equally evident that the differences are organic, and not personal.

EMOTIONAL FACTORS

A human being is an individual by virtue of his biological inheritance and by maturation. He is an individual in the

sense that he is different from every other object in the world. But one becomes a person, or personality, by the interaction or the interplay of the individual with environmental situations which call forth learning activity. A person is one who has developed certain habit systems which may be called characteristic ways of acting or thinking, or they may be termed personality traits. Beliefs and attitudes form a part of this equipment. Even one's language or style of speech is an index to how one has reacted or responded to social stimulation.

Various complexes develop as a result of conditions in the home or community. A case is reported of a child of ten who was in the fourth grade at school but had never spoken a word in the classroom. He would do his work well except for oral speech. In no way could he be induced to say a word. Upon investigation it was discovered that his mother had strongly impressed upon the child that he must not "talk" at school. The mother's words, misinterpreted as they were, caused the child to develop a fear complex against talking of any kind in the schoolroom. This case shows an extreme to which psychological disorders may affect one's behavior. Many traits in children which the teacher may carelessly ascribe to stubbornness or some form of mischief arise from unusual experiences out of school, and should be understood before a treatment can be prescribed.

A laboratory technique has been developed for determining the presence of emotional disturbances. Some of the instruments used are still popularly known as "lie-detectors," because they were first used to determine the truthfulness of statements made by criminals in police courts. One instrument, known as a pneumograph, measures respiratory

changes or changes in breathing during an emotional disturbance. It consists usually of a sealed rubber tube which is placed snugly around the chest. Breathing stretches and relaxes the tube, moving the air in the tube which is connected by a smaller tube to a tambour. The tambour makes a record on a revolving drum. An instrument for recording bloodpressure changes is called a sphygmomanometer, and is commonly used by physicians. A rubber bag is wrapped about the upper arm and inflated so that the pressure may be registered on a dial as air pressure. A third instrument is the sphygmograph, which measures pulse beats by being attached over an artery at the wrist.

The instruments and tests mentioned above are based upon the assumption that emotional disturbances involve measurable physiological changes in blood circulation and in breathing. When the individual is relaxed and normal the recordings are smooth and regular. Any attempt by the subject to evade a question, or in fact any unusual emotion will disturb the smooth recordings. Criminals when confronted with their records from these instruments sometimes confess their crimes.

A most promising adaptation for school use consists in obtaining an emotional profile for each child. Every child is unique with respect to his emotional complexes. Some children, for example, upon being rebuked will cry or in some other manner express emotional disturbance, but will soon forget all about the matter. Others may manifest no signs of disturbance but may actually be seriously disturbed for days or months. Injury to their health and delay in their work may result. The instruments previously mentioned can be used to record such disturbances, so that a chart or

profile can be made for each child. Teachers are careful to adapt procedures to the children's intellectual level; why not consider also their emotional organization? Of course an instrument is not needed to discover many of these conditions, if the teacher will take the trouble to make an extensive study of each child.

Some children quickly and stubbornly resent any attempt to force them to do something. They desire to initiate all their actions themselves. Others want to be told and even urged to do things. This may be a form of display to attract public attention. Some enjoy a clash with the teacher; others think that a conflict with the teacher is about the worst thing in school. The "high-tempered" child is sensitive to the words and deeds of others, and in a flight of temper tends to lose his balance and sense of values. This type of pupil is usually quick to return to normal, however. The sullen, introspective type may harbor an ill feeling for days and weeks without confiding to others his difficulties. A few will be found who have a kind of false pride and a distorted "sense of honor." They live under an emotional tension which may burst into violence when something goes wrong or some uncomplimentary remark is made regarding them or their friends. Hundreds of other types of emotional disturbances will be found among normal children, to say nothing of what may happen among the increasingly large number of psychopathic children in the public schools. The efficient teacher understands children, anticipates what they will probably do, and solves the problems in advance. Emotional factors should not be considered as something bad, negative, and disturbing. If understood and capitalized, the emotions may furnish a means to positive good.

SUMMARY OF PRINCIPLES

In order to make more emphatic the general principles set forth in this chapter, the following summary is offered.

1. Each individual is the product of two factors, or forces; these are heredity and environment.

- (a) The process of transmitting characteristics from one generation to another by means of the germ plasm is known as biological heredity.
- (b) The process by which ideals, knowledge, customs, language, and general culture are transmitted is called social heredity.
- (c) Environment includes all forces which impinge upon the individual from without, tending to cause him to act; it includes, therefore, the social heritage of the race.

2. Individuals have enough heritage in common to make possible a common school on a basis of cooperation. This implies common objectives and therefore a common curriculum.

- (a) Learners have received from biological heredity a similarity of bodily structure and organs, a nervous system which is sensitive and modifiable, and a number of basic drives or urges which lie at the basis of human behavior.
- (b) The common social heritage of learners includes language, ideals, skills, and techniques, which are acquired through the process of social heredity.

3. Children of any given age or grade manifest wide differences, some of which are due to biological heredity, and others result from environmental conditions.

- (a) Biological heredity accounts for differences in capacity to learn, in special abilities or talents, in temperament, and in certain other personality traits.
 - (b) Many differences among children are due to social heredity, or a difference in their cultural background. Environment is richer for some than for others.
4. Differences in accomplishment among children are evident at all ages and grade-levels.
- (a) Differences in achievement in school subjects are caused in part by the extent of the pupil's effort, by his degree of efficiency in the use of the tools of knowledge, and by the health and attitude of the learner.
 - (b) Certain differences in accomplishment are apparently due to the processes of maturation. It is useless to try to teach certain things before the appropriate level of maturity is reached.
5. Children manifest striking emotional differences which have a bearing upon their education. These also appear at all levels of the school system.
- (a) The depth and extent of emotional disturbance can not be estimated accurately from facial expressions. A laboratory technique is now available for making such a measurement.
 - (b) The teacher must recognize the importance of emotional responses as they affect the learning processes.

EXERCISES

1. Investigate the matter of biological heredity, and explain how individual differences are produced.

2. To what relative extent does the elementary school curriculum cater to individual differences and to common needs?
3. What means are now employed in the classroom to provide for individual differences?
4. Should a teacher seek to abolish individual differences and make all children more alike?
5. Do animals below man have a social inheritance?
6. What fundamental drives, urges, or motives may be ascribed to the following: attending a ball game, a dance, or a show; going to college; attending church; dressing neatly; giving presents at Christmas?
7. Why are people afraid? How do people differ as to fears, and what fears do all have in common?
8. What would you do with the child described in this chapter who would not talk?
9. What caused the differences which exist among the different nationalities today?
10. Does it make any difference whether "identical twins" are reared together or apart?
11. Would you expect differences of achievement among children to be greater in history than in handwriting? Why?
12. Which is better: to keep children in the same age group, or group them according to mental test scores?
13. Which should give the teacher the greater concern: what children need in common or their individual needs?

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CHAPTER IV

GENERAL CHARACTERISTICS OF LEARNING

CORRECT teaching procedures rest upon an understanding of the processes of learning and the conditions under which effective learning occurs. In view of the many problems of learning and the continual failures in school, one wonders whether the essential factors of learning are misunderstood by educators, or whether their knowledge is poorly applied. Before considering detailed learning processes involved in typical school subjects, this chapter will be devoted to a study of certain general aspects of the problem of learning. The first topic will raise the problem of a definition of learning. The second section will include a brief description of three types of learning. Then an attempt will be made to discover the psychological basis of learning. The fourth section will deal with the principles governing effective learning. And finally a distinction will be made between general and specific learning, with an evaluation of each.

THE PROBLEM OF DEFINITION

Perhaps every person has his own definition or idea of what learning is. Because of its broad connotations the word is difficult to define, except in general terms. One

learns how to walk, to write, or to read. It is said also that one learns a person's name, a lesson, a poem, or a trade. The various definitions of learning usually offered can probably be classified into four groups. One group views learning as a deductive or drawing-out process. Indeed, our word *education* comes from the Latin words *e*, meaning *out of*, and *ducere*, meaning *to lead*. Perhaps the Greeks were the first to make serious efforts to understand mental life. Plato, Aristotle, and others considered learning to be a drawing-out of consciousness the knowledge of particular facts. The assumption underlying the drawing-out process was that certain innate ideas, in the form of axioms or self-evident general truths, exist in every mind. From these acknowledged universals a person deduces knowledge, they thought, concerning any particular object or situation in life. Even when an empirical or inductive approach was used to discover a truth, the final test of the truth was always to be found in its agreement or disagreement with the given axioms. Knowledge was thus derived originally from one's consciousness, because the mind alone could grasp universal truths. According to this view an individual through sense perception could attain only partial knowledge of the mind or soul.

On the contrary, others have considered learning to be an intake process. John Locke, an Englishman of the seventeenth century, announced in 1690 his famous doctrine that the mind is at birth like a blank tablet (*tabula rasa*). His contention was that whatever is in the mind must be written there through experience or learning. This view gave new emphasis to the overworked doctrine designated elsewhere the information fallacy. The extent to which the

cause of education has suffered from the "head-filling" or "mind-filling" process is well known to the reader. It amounts to giving instruction without stimulating mental activity and growth.

A third group of definitions of learning emphasize changes in the nervous system. Under this mechanistic philosophy one might define learning as "the establishment of preferential pathways in the nervous system," "decreasing resistance at the synaptic gaps," or "building up conditioned responses." The bond hypothesis rests upon a similar type of explanation, each particular learning being considered the result of the establishment of a bond between a stimulus and a response. These brain-path theories have been heavily discounted by the results of recent experimentation.

A fourth group conceives learning as changes in the organism as a unified personality. Learning may be thought of as the process of acquiring new modes or patterns of response. One who cannot swim must acquire a new pattern of behavior before he can swim. So also with reading, writing, or problem solving. Learning thus becomes a form of mental growth, an accretion to personality. This view of learning is more hopeful because it treats the individual as a whole and avoids the obvious errors of the other views. All investigators seem to agree, however, that learning implies changes in the organism due to experiences of some kind. In this sense learning is distinguished from native or inborn behavior. Inorganic or dead objects cannot have experiences, and therefore cannot learn. The significance of learning will become still more evident after considering the types into which the various learnings may be grouped.

TYPES OF LEARNING

The confusion regarding the definition of learning arises in part from a failure to differentiate the various kinds of learning behavior. The tendency is to define one kind or type of learning on the assumption that all learning is of only one kind. Reasoning is learning, but not all learning is reasoning. Memorizing is learning, but not all learning is memorizing, and so on with the other forms of learning. A careful analysis of learning processes shows that a learner does not employ the same mode of mental procedure for all learnings. Perhaps each form of learning deserves to be discussed in detail, but space forbids such an analysis. For convenience of treatment in making a brief analysis the various learnings will be classified into groups having similar characteristics. These groups of learnings will be designated types of learning. Only a brief description of each type will be given here, since a whole chapter is devoted to each of the three types elsewhere in this book. The reader who wishes a more extended treatment than is given here should refer to the appropriate chapters which follow. Before differentiating these types, however, it may be well to consider certain important elements which are common to all types.

Common elements in all types of learning. When an individual desires a type of response which he cannot at the time make, there develops a kind of tension or feeling that his equilibrium has been disturbed. All learning situations involve an awareness of a kind of tension or imbalance between present patterns of response and those required by the individual to attain a desired goal. Unless such a situation is confronted, either consciously or unconsciously, no

learning takes place. Such a recognized imbalance furnishes genuine motivation, an element which is present in all effective learning, whether it be the attainment of a skill or an understanding.

Irrespective of the field of learning, there must be a vigorous pupil response or effort. Recognition of a goal of achievement would be useless unless the learner strives to attain it. This does not mean that the learner merely makes a defensive "reaction" to a stimulus, but also he assumes an offensive attack upon the situation requiring the acquisition of a new pattern of behavior. Strictly speaking, all learning is active, there being no such thing as learning passively or by absorption. The pupil response or effort may assume many forms; it may be movement, speech, choice, reflection or reasoning, or even inhibition.

A third common element is self-appraisal and knowledge of one's progress. All experiments indicate that knowledge of one's progress aids and promotes learning of all types. If a pupil is kept in ignorance in this respect he tends to lose sight of the goal to be accomplished. In other words he has lost his grasp of the whole situation through loss of perspective. To lose sight of the goal or to become unaware that it exists, is to destroy the learning situation. Few learners will continue to strive for goals which continue to seem impossible of attainment.

Differentiated types. In the early years of the elementary school the predominant type of learning involves the acquisition of habits, skills, and arbitrary associations. Such learnings may be identified either by the processes of learning, or by the outcomes of the learning. In each case practice is an element in the learning. By practice is meant the ad.

vancement towards the learning product occasioned by each effort or rehearsal. Mere repetition does not necessarily give practice. Because of these successive stages of advancement towards the perfection of the skill or association, this type may be designated the *practice type* of learning.

Another element common to learnings of this type is imitation of models or demonstrations. Handwriting affords an illustration of a sensori-motor skill, while spelling and arithmetical symbols represent arbitrary associations. In both cases conventional forms or models are copied and efficiency is gained by practice. Other examples of learning in this type are skating, pitching ball, and swimming.

A second type of learning may be designated the *rational type*. In this case the learner seeks to gain understandings and develop a rational attitude. Here the mode of learning is radically different from the practice type. Practice is not a consideration, but rather the learner seeks insights and understandings through various processes of analysis, organization, and integration. The outcome is not a skill but an attitude; not an arbitrary association but an understanding. Although this type has been fittingly called the science type, several subjects not usually classified as sciences belong to this group. Clearly such subjects as history, ethics, geography, civics, and grammar belong here. No amount of drill or mere attempt to imitate will satisfy the demands of this type.

The value attitudes constitute the outcome of the third type of learning. Commonly these learnings have come to be called *appreciation*, or simple recognition of worth. In many ways this type is most valuable in general education, and doubtless the most neglected. The value attitudes, or

a sense of value, are not attained by a rational process but come as a result of true education, or the development of personality. The process is one of growing a person to whom real values will be apparent when met. The results of such learnings are not beliefs or reasoned convictions but rather an individual with the ability and the disposition to weigh values and to discriminate between the good and the bad.

Instead of classifying all learnings into three types, Morrison has proposed five types. These are the science type, appreciation, language arts, practical arts, and pure practice.* For our purposes the last three have been grouped into one type and called the practice type. Certain learnings in Morrison's practical arts type seem clearly to belong to the science type. His science type and appreciation type are similar to the ones treated in previous paragraphs. For a more complete explanation of these types as applied to the school subjects the reader is referred to later chapters.

THE PSYCHOLOGICAL BASIS OF LEARNING

In this section of the chapter the problem is to examine the psychological foundations of the learning processes for the purpose of pointing the way to more intelligent teaching. There will be a slight overlapping of other parts of the book in which applications to particular learning situations are made, but this is done for the purpose of analysis and emphasis. As a guide to the reader the main generalizations or principles are stated at the beginning of the discussion. (1) Learning is a form of growth. (2) Certain emo-

* H. C. Morrison, *The Practice of Teaching in the Secondary School*, (Revised), p. 91. Chicago: The University of Chicago Press, 1931.

tional factors are of prime importance in learning. (3) Mere activity or repetition is not learning. (4) Learning begins with a condition of tension or imbalance between a person's present behavior patterns and those patterns which are needed to attain a desired goal. (5) Learning proceeds from vague, unanalyzed wholes to differentiated parts. (6) An explanation of learning must take into account not only the individual but also the social and cultural systems in which the learner operates.

Learning as a form of growth. It may be truly said that education is growing up by learning. If teaching is to induce mental growth, an insight into the conditions of growth is necessary. While the exact nature of growth is unknown, there are known principles of development which should be carefully considered. Learning involves growing into or becoming a different person. Strictly speaking, therefore, one does not learn a lesson, but one may learn *from* a lesson. Learning is a form of adaptation, but one does not adapt the lesson, but rather the adaptation is in the learner. We cannot "learn" a child to read or spell, but we can teach him.

Neither heredity nor environment alone can produce growth. The interaction of the organism and its environment produces the growth. The limits and general direction of learning are doubtless set by heredity, but environment must determine whether the limits are reached. Even identical twins, who are supposed to have similar heredity, show marked differences when reared apart from each other.

Growth may be facilitated or it may be arrested. A grain of corn, no matter what may be its hereditary qualities, will

not reproduce its kind through a process of growth unless the conditions of soil, air, and temperature are favorable. Its growth can be stunted at any level of development. A person may be born with the capacity to become a man of average height and weight, but unless food and exercise are supplied, these results will not be attained. One must actually grow to maturity, and the process of mental maturity is a matter of learning. People are not born intelligent, but they are born with capacities to become intelligent, each within his own limitations. Becoming intelligent is not merely heredity plus a process of maturation. One must actually be stimulated to learn in order to experience mental growth. Mental growth can be retarded or stunted just the same as physical growth, if conditions are unfavorable.

A correct use of terms will help to make the process clearer. The words "grow," "learn," and "educate" are often used as transitive verbs, but perhaps wrongly so. One cannot actually grow corn or potatoes; one can cultivate these and help cause them to grow. It is hardly proper, though not unknown, to hear one say, "That learned me a lesson." We cannot "educate" children; we can only teach them and they will become educated. One cannot learn for another any more than one can grow for another, for learning is a form of growth.

Emotional factors in learning. It has been assumed by some that a person cannot be rational while experiencing an emotion. Doubtless there are strong emotions such as anger and fear which might be incompatible with the highest rational performances, but these are exceptions to the rule. Much depends upon the person's education and training. A football player works under a great emotional

tension, anxiety, and expectancy, and yet he is intellectually alert. The emotional tonic helps his performance. Any person pursuing a piece of work which is deemed highly important experiences an unceasing emotional reaction as he nears final success. He may even forget to eat or sleep. Instead of being less efficient he is really more efficient and rational. In fact there is a thrill, an excitement, an ecstasy in the intensive pursuit of certain intellectual enterprises. If any one is doing an extraordinary task, why should he not become excited about it? Public speakers need not become irrational merely because they are deeply stirred emotionally. This is simply another way of describing enthusiasm, which is a positive factor in learning. So at least the pleasant emotions are favorable to learning.

A strong desire or eagerness to achieve a goal is fundamental to learning. Indeed all learning requires a given amount of this longing. Any lukewarmness or half-hearted attitude is not conducive to learning. The more the goal is desired and the more it seems tangible, the greater the learning effort. The emotions need not work against rational behavior but rather accompany and reinforce our intellectual efforts. To say that a person "works frantically" at a task does not necessarily imply that the task is not being well done.

Consciousness of achievement brings satisfaction and aids learning. Knowledge of one's success during learning, coupled with suitable praise produces an emotional reaction which insures better learning. In a contest where excitement or enthusiasm runs high, each new success or point scored increases the effort without any loss in intellectual efficiency, except in very extreme cases.

Certain learnings are permanent because of the emotional condition of the learner at the time of the experience. The experience may be from the sight or the words of some distinguished person. It may be from an impressive occasion or setting in which the learning occurred. In any case the impressions are more permanent if there is a proper balance between the rational and the affective elements. Perhaps the effectiveness of motion pictures is due largely to this condition. At any rate, children learn effectively in that manner, and during the show they usually experience considerable excitement.

Negatively it should be pointed out how certain violent, unpleasant emotions may inhibit learning. Anger at the teacher or extreme fear of the teacher are detrimental to learning. What has been called the law of effect is violated in these cases. But even under these conditions one is not incapacitated intellectually, except that one has an aversion to the tasks assigned.

Mere activity not learning. All learning results from activity of the individual, but not all activity is learning. Physical activity is conducive to physical growth but not necessarily to mental growth. The various "activity" programs so much discussed in recent years have not always been able to give an educational account of themselves in this respect. The fact that children are busy doing something does not mean that they are learning. The real test of an activity is the extent to which it actually contributes to the attainment of the educational objectives.

In this connection let it also be emphasized that mere repetition or exercise is not learning. This point is developed in the chapter on the practice type of learning and

need not be repeated here. In the light of our previous definitions of learning, it is clear that the activity must result in changes in the personality of the learner.

How learning begins. In making an analysis of learning, it must be kept in mind that there are different types of learning. The problem of explanation involves the selection of language which will describe the learning processes in general. To say that a thought question starts learning activity is to refer to only one kind of learning, the rational. To understand how learning begins one must consider the learning situation. In rational learning one must recognize the problem; if there is no problem in the mind of the learner, there is no reasoning, or learning. But if there is a recognized problem, there may yet be no learning unless the solution is desired. So it is in reading or handwriting. The child does not have what he wants; he recognizes the fact that he does not have it, and begins to learn.

This factor of motivation furnishes a cue to the understanding of how learning begins. In any learning situation there exists a tension or imbalance between a person's present behavior patterns and those patterns which are needed to attain a desired goal. On the animal level this condition of tension is easily observable. The ape in a cage desires a banana which is out of reach. His present mode of response, that is, reaching directly for the food, is not adequate. He then acquires a new type of response by jointing two canes together, and rakes in the food. A child wishes to know what is said in books. His present patterns of response are not adequate to find out for himself. He thus begins to learn to read in order to acquire the response patterns necessary. These cases also illustrate

the fact that learning is acquiring new modes of response. In still more general terms, it may be said that any response is the result of a felt need in the organism. This felt need is the goal of achievement.

How learning proceeds. After learning activity is stimulated, the organism makes a direct attack upon the goal to be achieved. The learner does not begin with units of discrete, unrelated reflexes or bonds, but on the contrary there is an increasing differentiation of actions from a broad pattern of response. For example, a child knows a tree before he knows the kinds of trees or the parts of a tree. Perceptions are not built up by a series of combinations of sensory experiences such as the size, color, shape, and taste of an orange, but rather the parts or elements emerge as a result of differentiation of a figure or pattern from its background. Indeed a part is inconceivable apart from the whole to which it belongs. Teachers of reading have long since adapted their procedures to this principle, in that they have discarded the alphabetical or atomistic approach.

Other evidence that learning proceeds from vague, unanalyzed wholes to differentiated parts could be presented indefinitely, but only another case or two must suffice. At first the child desires to draw a house. He puts on paper something which to him is a house; at least it is a finished product and labeled a house. It may lack most of the essentials of a house such as windows, doors, chimney, and roof. But after some practice in learning to draw a house the details begin to emerge and the drawing resembles a house. No one would argue that the child should first master all of the details of lines, curves, and angles and

finally put these perfected parts into the whole to make the house. In swimming one must not expect first to master small details of movement or strokes; one rather plunges in and attempts to swim, differentiating and refining the movements through repeated efforts and the resulting practice. This principle is the psychological justification for presenting the curriculum in large, meaningful units, rather than expecting understanding to result from an accumulated mass of isolated details.

Social aspects of learning. Experimental investigations of animal learning have thrown some light upon the individual aspects of human learning, but they have omitted the social and cultural aspects. Animals are not susceptible to culture in the sense in which this word is used in this book. They live and act in a natural world, on a perceptual level, and from native impulses and urges. The principles of animal learning, therefore, have only a very limited application on the human level.

In explaining human behavior we must not be contented with an individualistic, animal psychology. Any type of psychology which attempts to explain human behavior by merely examining the individual's structures and functions is doomed to failure. A human being moves in a social and cultural environment. In the first place our culture is socially produced. The child is an heir of racial wisdom; he is born not with this culture or heritage but into it. He can no more escape it than he can escape the air he breathes. His motives, ideals, desires, attitudes, and even his ambitions are largely determined by this social environment. Certainly his higher intellectual interests are socially conditioned.

In the second place society has furnished the means of appropriating this culture. Language is a social product and is doubtless the most important and conspicuous aspect of the mental life of a normal person. It is a system of abstract symbolism which projects and elevates human behavior far beyond any possibilities of animals. Likewise our precision with respect to number concepts is the result of a socially developed number system. Reading and writing of course make possible the preservation and transmission of this culture from generation to generation and tend to increase it in the same process. In view of these obvious facts, the learning processes assume a new significance. A child learning to read, write, or to solve problems in arithmetic is a picture in which a personality is the figure and a vast cultural society is the ground. The picture, that is, learning, is empty and meaningless apart from both the figure and the ground. And so returning to our previous proposition, we may say that the proper study of man is not only man, but also the forces and factors which have made the man what he is today.

PRINCIPLES GOVERNING EFFECTIVE LEARNING

Attention is now directed to certain factors influencing the progress of learning in general. Six principles or generalizations are first presented as an outline of this section. (1) Effective learning requires a favorable learning situation. (2) Learning must be consciously directed under expert guidance. (3) The learner must be aware of the proper procedures to be followed. (4) Mastery of the learning tools is necessary to effective learning. (5) Instructional materials must conform to the needs and ca-

capacity of the learners. (6) After learning is initiated, one's progress in learning is determined by certain definite factors.

The learning situation. Conditions must be favorable if young people attain the highest learning efficiency. The problem is aggravated by the necessarily artificial conditions of a classroom where instruction must be given. The best work is accomplished when the room is kept at a temperature not far from 70 degrees Fahrenheit. Natural light in sufficient quantity should be admitted, preferably from the left side of the learners. Walls, blackboards, or other furnishings must be free from glare or reflection of light. Slightly tinted walls are usually superior to the white. Desks should be adjustable in at least three ways: height of seat from floor, sitting height, and width of seat. Ventilation must be adequate, and crowding of pupils avoided. Each pupil should have at least 250 cubic feet of air space, or 1000 cubic feet per hour where forced circulation changes the air every 15 minutes. Of course it is assumed that the learners are in good health. Any physical disorders must be corrected before a pupil can attempt to learn under school conditions.

Almost any teacher will provide the necessary physical conditions, but often many psychological conditions are overlooked. The very first essential to a correct learning situation is the establishment in the learner of a goal of achievement. Parents and teachers usually have in mind desirable goals for the learners, but the goals must become the property of the learners. Goals must not be too remote from the learner, lest he feel that they do not apply to him; they must be viewed by the learner as tangible. Goals may be set for one day or for many days. In spelling the goal

for today may be to learn to spell four or five new words. In handwriting the goal for the year may be to learn to write with an efficiency equal to the norm for that grade in terms of speed and quality. A bit of self-examination may be needed to convince the pupil that he is void of certain desirable achievements. It is futile to try to force pupils to work on school studies when they have no conscious objectives but merely work to avoid punishment or to please the teacher and their parents. When goals are established the pupils will be motivated, and the result will be an abiding interest in learning.

From the teacher's standpoint there must be a high degree of group control to make the learning situation correct. In group instruction divergence of attention must be avoided. If the teacher is slow or awkward, group attention will fail and chaos will result. The teacher should create a pleasant situation and give the impression of dignity, calmness, fairness, and expertness. He must be master of the situation and also of himself. All types of distraction must be avoided, or if possible anticipated and provided for in advance.

Expert guidance. A teacher is employed because he is assumed to be capable of giving expert guidance in the processes of learning. It is not enough to provide a learning situation and then leave the pupils to their own fortunes. The systematic teacher will watch the processes in each learner, note the errors and difficulties, and evaluate the progress from day to day. He will diagnose the cases of difficulty and prescribe the remedies. Nothing is left to chance or to incidental learning; guidance must be conscious and constant.

Learners must know the processes required. Each particular type of learning, as previously explained, requires certain definite modes of mental procedure. Not that the pupil must understand the psychology of learning; far from it. From his point of view it is a simple question of what he must do, how to study, how to begin, or how to know when he has finished. Actually many pupils, and even students in high school and college, work hard and not only do not learn but do not know that they have not learned. A good illustration is the learning of history. If a pupil thinks that he is to memorize the textbook he has the wrong idea of the processes required and also the ends or goal required. Since the end is an understanding or rational attitude and not a memory content, he can be led to realize that memorizing is the wrong process. Many precious library periods are wasted by pupils in copying from books the materials which should be weighed, evaluated, and studied with some worthy purpose. In learnings where a skill is required, it is not proper to sit and meditate or rationalize, but there must be intense, concentrated practice with the attention upon the model or goal to be accomplished.

Mastery of tools of learning. The workman must not only have the necessary tools, but these must be in good working order. The first important learning tool acquired by a child is language. Through this medium instruction is made possible. The extent to which this is perfected in the pre-school period will determine how well the child makes a beginning in school. Thereafter his progress in school will parallel his further growth in language. If children are deficient in language the teachers would save

much time by suspending other activities and attempting to sharpen this indispensable tool.

A physical tool or device is the laboratory. In handwriting, the laboratory instruments are pencils, paper, ink, charts, blackboards, handwriting scales, and so on. Later in school the learner will need the regular laboratories for the various arts and sciences. It should be emphasized here, however, that there is no particular virtue in being sentenced to serve a period each day in a laboratory, or workshop. The laboratory ceases to be a tool or instrument in learning when it becomes merely a place to follow directions blindly without any conscious problem or goal in view.

Although books are useful instruments all through the period of learning, they cannot be utilized without the intellectual device of reading. Just as the telescope and the microscope extend one's capacity to explore worlds invisible to the unaided eye, so reading extends one's experiences beyond the realm of the immediately perceptible world. Efficiency in reading is, therefore, important in all learnings of the higher order.

Certain learnings require a large use of quantitative concepts. Temporal and spacial imagination are essential in subjects such as history and geography. All of the arts and sciences involve quantitative concepts of one kind or another. What would pictorial art be without the science of depth perception? Or what would the physicist, the chemist, or the engineer do without precise measurements? So the number system with its numerous applications is an essential tool in effective learning.

Suitability of materials. The subject matter or learning

materials must meet at least three requirements: they must be worth learning; they must conform to the proper grade level or maturity of the learner; and they must be presented in proper sequence. Much of the literature coming from the press today and finding its way into the public schools is not worth serious consideration. Moreover, the learnings acquired in the public school are not all of equal value. There must be close discrimination of the materials by a competent teacher. Learning may be hindered if good materials are placed on the wrong grade level. Such was the case quite generally before the coming of standardized measuring instruments in education, notably in spelling and arithmetic. Much depends upon the sequence of the materials. In geography, for example, it makes a difference whether one begins with the general and extensive and goes to the specific and intensive, or whether the reverse order is followed. The case is quite clear in arithmetic, where logical sequence cannot be ignored. But a logical sequence is not sufficient; there must be a psychological sequence, that is, a conformity of the material to the principles of learning and mental growth.

Having considered the preliminary factors in effective learning, let us review the specific factors which affect the progress of learning after it has begun. Granted that the learner is prepared to learn, the materials appropriate, and the learning situation is right, what factors or conditions determine the progress or efficiency of learning?

Factors affecting progress. Progress in any kind of learning is improved by a proper distribution of the periods of work. Regular study of a subject each day during the term is more profitable in the end than intensive study or cram-

ming for a short period of time. In memorizing, the advantage is quite apparent. If a person has one hour to devote to the learning of a poem or speech by memory, it is better to use four periods of fifteen minutes each, with an interval of time between each sitting, than to do all of the study in one period of sixty minutes, or even two periods of thirty minutes each. Of course the study periods must not be too brief, since very short periods do not allow time to "warm up" and develop concentration. Experiments reveal that learning by distributed practice periods is not only faster but more permanent. This is shown by the fact that less time is required later to relearn what was learned by the spacing procedure.

Fatigue must be avoided by wisely choosing the length of the study periods. These will vary according to the ages of the learners. Fatigue may be defined as the decreased capacity for work which comes as a result of work. It usually sets in long before any visible signs can be observed. One must not wait till the evidences of fatigue appear, but rather judge the time which can be safely used for work without incurring this decreased efficiency. Long hours of sustained effort after fatigue has begun are now considered more injurious than beneficial from every point of view.

Progress is facilitated by specific practice in the function to be improved. Instead of expecting handwriting, spelling, and arithmetic to be learned from the pupil's study of reading, language, or other activities, it is more economical to give intensive practice and concentration in these specific studies. One had as well expect a child to learn history and geography by reading the daily newspapers. A most casual observation should convince one that incidental learning is

neither thorough nor permanent, unless it impresses one more than school subjects usually do. Psychologically we learn the things which concern us sufficiently to get our attention and thoughtful concentration of effort.

Verbal learning, or memorizing, is facilitated by frequent recitation, or attempts to recall during the learning. It is uneconomical merely to read a selection over and over without endeavoring to reproduce it. Recitation has been called active repetition as opposed to the passive method of keeping the eyes on the material to be memorized. The word "recitation" must be understood to include any form of vocal or mental reproduction of the material studied. It may be repeated to others, or merely to one's self, without looking at the material. It requires greater effort and closer concentration of attention to recite the material than merely to read it; this fact may account in part for the effect of recitation upon progress.

Another factor affecting progress is the method used by the learner. If a poem, for example, is to be memorized, is it better to learn it stanza by stanza, or to read it over as a whole from beginning to end till it is learned? Experimental evidence points towards the whole method as superior to the part method for most people. In case a person has become habituated to the part method, he may find the whole method unsatisfactory. In using the whole method there is a tendency to become discouraged because one has to study so long before anything can be recalled or repeated. If one can avoid this subjective reaction and give the method a chance, it will usually prove to be superior. Very difficult parts may be repeated more often, provided the whole is rehearsed soon afterwards.

The question of definition of "whole" is important. Logically, a whole is a meaningful body of material, such as a poem or a speech. If the whole material is conveniently divided into meaningful parts, such as acts in a play, then each part may be considered a whole. Psychologically the age of the learners must be considered in determining the units to be treated as wholes. Sustained application and wide comprehension cannot be expected of children. Strictly speaking, all learning proceeds from wholes to parts, as previously explained, but the immature learner must deal with the smallest meaningful wholes.

Learning a poem, for example, by the part method tends to form wrong connections which will cause confusion later. If one stanza is learned at a time, in reciting it the last word in the stanza tends to be associated with the first word in the same stanza, whereas by the whole method the last word in one stanza is connected directly with the first word in the next. The whole method thus prevents one from becoming "stuck" at the end of stanzas or paragraphs. The progressive part method is found to be superior to the part method. In this cumulative or progressive part method the learner masters one section or part, then the second section, then sections one and two together, then masters section three, followed by one, two, and three together, and so on, till the whole is learned.

Self-confidence is a factor of importance in learning, regardless of the maturity level of the learner. There is much psychological ground for the old adage, "He can who thinks he can." Self-confidence in children can be encouraged by teachers in three ways: (1) by suitable praise when they have succeeded or made some effort; (2) by making the

tasks or assignments easy enough so that they can actually be accomplished; assigning work too difficult discourages most pupils and makes them feel inferior; and (3) by keeping them informed of their progress in learning. It has often been demonstrated experimentally that learners do better if they are informed of their success during the learning. It is a sort of tonic and an incentive to do still better work.

Progress in learning is vitally related to one's improvement or refinement of methods of procedure. This principle is illustrated in the classic experiment of Bryan and Harter with subjects who were learning the telegraphic code. In receiving the code messages the learners made gradual progress for a few weeks but soon came to a level of performance or plateau in the learning curve, where no apparent progress was being made. Many factors may actually account for the subsequent rise in the learning curve, but probably the improvement in method was paramount. At first the learners tended to receive the smallest units, namely the sounds which represent the dots and dashes composing letters as sounded by the telegraphic instruments. They thus became letter conscious, tending to spell out, so to speak, each letter and each word by a synthetic process. At the plateau they reached their maximum efficiency under this system, but as soon as they learned to listen to word patterns and whole phrases by weaving words into sound patterns they adopted new perceptual units, and hence their learning efficiency began to rise sharply. The same principle holds for learning to listen to a foreign language; one must rise above mere word consciousness and grasp larger units. Likewise in typewriting; the expert

knows the feel of words, and they are written as patterns rather than from letter consciousness. And so in many fields of learning, efficiency can be improved by discovering the best methods of procedure.

GENERAL VERSUS SPECIFIC LEARNING

Attention will now be directed to the educational implications of the manner of teaching and learning. It makes a great deal of difference how the various learnings are taught and acquired. In considering this matter, attention must be focused upon the organism as well as upon the learnings as such, because the individual is the crucial factor and chief element common to all of his learning experiences.

The theory of specific learnings. A rather prevalent doctrine holds that all learnings are specific in character, and that the sum total of these compose one's intelligence or education. Each learning is presumed to be a sort of discrete experience brought about by a response to a stimulus. This assumption suggests adherence to the bond hypothesis or some other form of the brain-path philosophy. It suggests additions or accretions *to* an individual rather than fundamental personal changes *in* the organism. The assumption is that these increments are quantitative rather than qualitative.

Unfortunately certain teachers do encourage that method of learning. Each learning, under that assumption, is presumed to be a sort of gadget which can be called into play when and where it is needed. Such a conception makes null and void the operation of the higher mental processes of integration, organization, and rationalization. In every

learning activity, there is inevitably involved a meaning, or a principle, or at least an important relationship to some other learning. To recognize these is to prepare the learner for higher efficiency in new and different learning situations.

The concept of transfer of training. The theory of transference of learning has caused much discussion and experimentation. The doctrine holds that learning acquired in one situation will in some way affect one's learning in another situation. It may improve or facilitate one's learning in the second situation, or it may actually hinder or interfere with learning. In the latter case negative transfer is said to occur. Will the learning of one maze or puzzle affect the learning of other similar puzzles or mazes? Will a child who has been trained to be neat in regard to his clothing show likewise a similar neatness in his penmanship or in the care of his books? Will mathematical training improve one's ability to reason about law or economics? To what extent will the study of Latin improve one's knowledge of the English language? These and other similar questions have been raised by investigators in this field.

Formal discipline and transfer. After the close of the Middle Ages when the modern vernacular languages began to assume a prominent place, the utilitarian value of Latin as a medium of instruction began to decline. Scholars who had been trained in Latin were loath to surrender its use in favor of the vernaculars. A new justification for Latin in the schools was found in the concept of formal discipline, which they swiftly adopted. Advocates of the doctrine assumed that the mind is made up of some twenty to thirty faculties or discrete powers, such as memory and reason,

and that these by appropriate exercise could be trained so as to function equally well or better in any field to which they might be applied. For example, the memorizing of Latin would at the same time train the memory better to remember dates, historical facts, or other materials, because of the increase in the general power of memory as a faculty of the mind.

Formal discipline has had a large following from that time to the present. Certain teachers, notably in mathematics and foreign languages, assume, in spite of experimental evidence, that those subjects train a person's faculties of mind in much the same sense that gymnastics train one's muscles. Our early colleges, imbued as they were with formal logic and the classics, popularized the doctrine in educational circles. The influence also permeated the lower schools. Textbooks in arithmetic contained a preponderance of problems or "brain twisters" which no pupil would ever meet in life. So also the spelling books were made conformable to this doctrine by including long, rare words which were designed to discipline the mind and make ordinary words easier by virtue of this increased mental power.

On the other hand, the more recent concept of transfer of training assumes no faculties of the mind in the sense of discrete powers. It is concerned with the question of how the organism, after having had an experience in one situation, meets subsequent situations. Educationally the chief problem is to discover how the organism can profit most from each learning situation. Methods of study and mental habits are important factors. If the manner of learning vitally affects a learner's subsequent behavior, then it be-

hooves the teacher to concern himself with the principles pertaining to this important matter.

The function of general principles. Assuming that the reader has at least a fair acquaintance with the experimental literature dealing with the transfer of training, and with the various theories proposed in explanation of how transfer takes place, let us consider the importance of generalizing or grasping the meaning of a learning experience. Consider an example from arithmetic. Suppose a child merely learns that four times six equals twenty-four. This circumscribed experience has no particular value in acquiring other similar learnings. But if as a matter of principle he understands also why this is a fact, how it can be demonstrated, the relationship of the process to addition, and the fact that multiplication is merely a process of rearranging numbers with reference to a number system, then much profit will result from his experience. The learner becomes oriented; his experience has significance.

Abstraction is a form of generalization. Suppose the idea of brittleness is to be taught. The child observes that crayon breaks easily and he is told that crayon is brittle. Likewise the process is repeated with other substances such as glass, ice, wood, or china. Now if only one example were used, the immature learner might think that brittleness is crayon or some other object. The process involves a higher mental operation in which one "cuts off" or disregards certain details of each situation in the interest of a single line of thought, or idea, which in this case is the quality of brittleness.

In elementary science suppose one is learning how dew is formed. Actually there may be several degrees of under-

standing of this process. The teacher may explain the process and the pupil merely learn *what* he says. This is a case of nonlearning, but it is not uncommon. Another pupil may learn that the moisture comes from the air and collects on grass and other objects. Another may go still farther and learn that the blades of grass cool more quickly at night than does the air and thus cause the moisture from the air to condense on the blades. But a still further step is needed to establish the learning. Other illustrations of the principle will be needed, such as observing the moisture on the outside of a glass of cold water. And finally the principle should be stated by the learner in terms of evaporation and condensation as related to surface temperature. After these experiences suppose the learner observes moisture on the windows of an automobile. Can he without a close inspection tell which side of the glass contains the moisture and why? If the former learning was complete, he should be able to reason that the moisture is inside because the air is warmer inside than out, or vice versa, as the case may be. In all forms of learning the pupil profits most who seeks to make the learning complete in all of its implications and relationships. Learning thus assumes a higher character; the apperceptive basis of learning is enriched; and new learnings become easier.

Learning as a function of the organism. It is quite clear that the doctrine of formal discipline breaks down in its attempts to associate learning with discrete faculties of the mind. These assumed mental elements do not agree with the unified experiences of the organism. They are mere products of analysis, and do not represent the whole picture any more than hydrogen and oxygen resemble water. An-

other atomistic conception is the doctrine of "identical elements" in the transfer of learning. It rests upon the assumption of predisposed nerve tracts or brain paths formed in one situation and required in the same way in another. This theory makes no allowance for a changed personality or a newly integrated organism.

Perhaps it is all wrong to say that learning in one situation aids in another situation. It may be as well to say that what is learned in one situation need not be acquired in another, provided it is learned with circumspection, that is, with a full realization of the significance of the experience. Referring to our previous explanation of learning, it may be stated that acquiring general principles and meanings in one subject or situation is equivalent to advancing the individual nearer to all other related situations. The state of imbalance is partially removed; the whole organism is simply moved nearer to the new pattern of response. Partial patterns of response are completed in the new situation. For example, strength and nimbleness of the fingers acquired in typewriting are essential features of the pattern necessary to playing a piano. Also in learning a series of puzzles all based on the same principle, when the principle is clearly apprehended, nothing separates the individual's pattern of response in solving the first puzzle from that needed in the others, except the discovery of the factors differentiating the various puzzles one from another.

In concluding this section let it be emphasized that teachers have a tremendous responsibility in causing pupils to make the best of their learning activities. It makes a difference what one teaches, and it makes a difference how one teaches. The crucial matter is to be able to guide the

learning to the point of efficiency which will insure greatest permanency and usefulness in other relationships of life. In the past too much relative emphasis has been placed upon subject matter and not enough upon the learner's needs and the processes of learning. Once a ripe scholar was asked if he taught Greek in college. His reply was, "I teach boys and girls, but I begin with Greek." If all teachers could be genuinely concerned with the improvement of personalities, school experiences would be far more profitable than they are today.

EXERCISES

1. Could students make better progress in learning to receive telegraphic messages if they were taught to begin with words as the perceptual units rather than with sounds and letters?
2. State and evaluate the behavioristic theory of learning.
3. What subjects in high school should be required of all for graduation, considering the transfer value of school subjects?
4. If students who have studied Latin in high school consistently make better grades in college than do non-Latin students, could you conclude that Latin has large transfer value?
5. Formulate a definition of learning which will include all types and forms of learning.
6. What inferences can you draw from the fact that training the right hand in certain skills improves also the left hand in those skills?
7. Which kind of learning is retained the longest, nonsense syllables, motor learning, or meaningful materials such as history?
8. What is a learning curve? How is a curve of learning constructed? Set up a learning experiment for yourself and construct a learning curve from the results.
9. Describe an ideal learning situation, including all of the factors and conditions concerned.

10. What mental "content," including ideals, attitudes, prejudices, and interests does a child bring to school at age six? How does this equipment affect his subsequent learning?

11. Why is the problem of motivation on the college level different from that of the elementary school level?

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CHAPTER V

GENERAL PRINCIPLES OF TEACHING

THE purpose of this chapter is to point out some of the most important principles which apply to all teaching and learning. They are called general principles because they must be observed if any kind of teaching or learning is to reach its highest efficiency. There may be other general principles, but these are deemed absolutely essential. Certain principles which apply to particular types of learning will be considered in later chapters.

THE PRINCIPLE OF CLEARLY DEFINED OBJECTIVES

Statement of the principle. Learning is more effective when the learner has a definite idea of what is to be done or accomplished. It is almost needless to remark that this principle applies to the teacher as well as to the learner. The teacher may be partially or totally ignorant of the true nature of the learning products. In such a case there may be much study or activity without noticeable progress in education. A traveler is hardly capable of choosing the way or means to a destination if he does not know what the destination is. Likewise, in the schoolroom, if an appreciation or an understanding is desired, the teacher would hardly adopt a drill procedure in order to attain these.

The proper objectives must be identified. Some specific

examples may be helpful. In beginning handwriting the inexperienced child does not know what is expected of him or what he should do. The pencil and paper may mean nothing except things to play with. The uninstructed child is almost certain to hold the pencil in the wrong manner, to sit in an improper position, and to violate all of the other requirements of a writer. After the skill has been adequately demonstrated, the goal becomes clear and intelligent procedure can follow.

Both teacher and pupil may lack clearly defined objectives, for example, in geography. In a sense teaching may be said to be efficient if it attains the objectives in the most economical way, but there still remains the question as to whether the objectives are legitimate. If geography study consists in merely memorizing facts or answers to factual questions, then the finer objectives are entirely lost. It must also seek to make the learner intelligent and rational with respect to man's relationship to his physical environment. It calls for an exercise of the higher mental processes. With the proper guidance, any pupil who is old enough to study geography can discern the difference between these objectives.

In the earlier days of arithmetic in America, before the coming of Colburn's arithmetic (1821), the emphasis was placed upon acquiring certain rules by which ordinary problems could be solved. Teachers and pupils alike disregarded the reasons for the rules and the underlying principles involved. Knowing and remembering what to do in arithmetic is merely a lower mental operation, but understanding why a certain operation is required in terms of a number system is a higher mental operation. It is all a

question of clearly defined aims or objectives. The same principle of course applies on the level of the secondary school. Some students attempt to learn geometry, for example, by committing to memory the proofs which are demonstrated in the textbook. This practice explains why the "originals" are so difficult for many students. Teachers are largely to blame in this case. No matter what the particular learning may be, it will be more readily accomplished if both teacher and learner have clearly in mind the nature of the outcomes expected. Clearly defined objectives, therefore, may be laid down as our first general principle of teaching and learning.

THE PRINCIPLE OF DIRECT ATTACK

Statement of the principle. Learning is facilitated by making a direct attack upon the objectives desired. Direct teaching refers to the procedure which leads the learner to make this kind of attack. It is opposed to the indirect procedure which makes the approach through rules, definitions, or similar analytical devices. Suppose a salesman wished to teach a customer how to drive an automobile. The chances are that the customer would be asked to take his seat at the steering wheel. First would come a few preliminary instructions regarding the function of certain levers and manipulative devices. Then he would be required to start the engine and begin driving, the instructor correcting the learner's errors as he attempted to learn to drive. It is inconceivable that the learner in this case would be required first to learn to define and state the functions of all the parts of the automobile before attempting to drive.

The principle of direct attack is in harmony with the

organismic point of view in psychology which was discussed in a previous chapter. It is clearly the manner in which a person approaches life situations. It avoids any intermediate steps and proceeds directly to the type of activity required in the end. It is evident that this type of attack is more interesting, especially for children, because they are more concerned with the immediate and are less able to visualize vague, remote objectives.

How the principle is applied. A few illustrations will help to make the principle clear. In beginning reading the direct attack is quite generally employed today. Perhaps no teacher would begin by requiring a mastery of the alphabet, syllables, syntax, or other analytical phases of language which are uninteresting to the child. The child of six has no need for a knowledge of the structures of language, but merely the ability to speak and read at his level of maturity. Therefore, the beginning is with perceptual wholes which are meaningful, that is, with words and phrases. The attack is made upon the language directly by using it in its finished form. The same is evidently true when the child learns to talk; he attacks the language directly and not through the mastery of rules of grammar.

Foreign language also affords a good illustration. Most students of Latin do not learn to read it at all, but merely to decipher the language. Evidence for this statement is gathered from the scientific study of eye movements of ordinary students of Latin. They do not read the Roman order of words but skip about, seeking the subject, predicate, and other parts of the sentence, trying to follow the English order. They are extremely word conscious, totally incapable of following smoothly the line of thought. This

indirect attack through the mastery of grammar may lead to a knowledge of the structure or syntax of the language, but if the language is to be spoken or read intelligently, the direct method of attack should be used. Grammar is the science of language and requires a different type of learning from that required to learn to speak a language. One may be able to speak a language without any knowledge of the structures of that language, and vice versa. The teacher's problem is to determine just what the objectives are in the language studies and to proceed accordingly.

In geography the approach may be made by use of the natural surroundings of the child. Many of the fundamental types of geographic factors can be observed directly, such as weather, seasons, and natural features of the earth, including the ways in which man deals with these factors. On the other hand, the indirect attack emphasizes the study of books as an end. Some of the older textbooks in geography, beginning with that of Jedediah Morse in 1784, approached the subject by questions, answers, and definitions which were to be memorized. The result was memory content, but not geographic intelligence. It is doubtful that the real objectives can ever be attained in this indirect manner. Extensive trips are not necessary in using the direct attack; it is largely the way in which the teacher introduces the subject that brings the best results. Any teacher who is well informed about current events—and all should be so informed—can begin the geography lesson by referring to some important event or visit which some one has made to the region which is being studied. This kind of approach subordinates the textbook and plunges the learner directly into the subject.

On all levels of the school system the principle of direct attack applies equally well. In physics, for example, the student may well begin with a direct study of the latest products of this science, such as the radio, motion pictures, or any of the machines. Practically all interest in the subject may be killed by beginning with extensive measurements, laws, definitions, and other technical details used by the specialist. In the learning of typewriting, piano, swimming, handwriting, and the other skills the learner begins by attempting the form of procedure required as a finished product. The principle recognizes the importance of proceeding from the whole to the parts, because it is the whole which alone has meaning and arouses interest.

THE PRINCIPLE OF APPERCEPTION

Statement of the principle. A person's ability to learn in any situation depends very largely upon what he has learned previously. It will be observed that this statement of the principle is in terms of learning, because always the learning processes must guide the teaching procedures. Stated more generally the principle is that a person's response in any given situation is influenced by the person's past experiences. According to this doctrine, the more one knows, the more one can learn, because each learning experience tends to enrich one's background for comprehending the new learnings.

Let it be stated emphatically that a person's apperceptive basis, or "mass," is not merely a quantity of stored knowledge. It is a product of learning registered in personality. It is that which distinguishes the intelligent from the unintelligent. It may be called the sum total of what one has

learned from one's experiences; not an aggregation of experiences, but a rearrangement and organization of all that the outer world has contributed to consciousness; not memory content, but ability. Many writers have caused confusion by saying that apperception means "linking the new to the old," or "proceeding from the known to the unknown." Both of these phrases refer to memory content rather than to an impressionable organism. They imply that learning is a filling process. The principle of apperception, from the standpoint of the teacher, implies that the learning to be acquired must be approached or presented in accordance with the learner's educational maturity or experiential background.

Psychologically it may be said that the organism as a whole is acted upon in a stimulus situation. The organism not only reacts, but *acts* in accordance with its nature and educational experiences. Inanimate objects react to stimulation, but it requires life to act. A person's apperceptive basis is constantly changing in accordance with his growth in the processes of education. A person may not be expected, therefore, to respond in exactly the same manner to a given stimulus applied at different times or under different circumstances. In other words, the individual himself is the most important part of the stimulus-response unit. Any illustration of apperception is inadequate, but it may be helpful to compare the process to a river flowing into a lake from which there is an outlet. The water which flows into the lake does not remain intact and flow out as the same water, but the outflow is changed and colored according to what is in the lake. The illustration is not accurate in many details, of course, but it serves to emphasize the

importance of the organism in trying to predict the probable response which may be expected from a given stimulus situation.

Apperception and knowledge. The teacher must build upon the foundations of knowledge which the learners already have. It is easy to "speak above their heads." Children of any given age differ immensely as to what they know about the world. It may be expected that their reactions will vary accordingly. But if all children possessed equal quantities of knowledge, there still would remain the problem of employing the proper stimulation to arouse the necessary learning responses.

If a group of people listen to a lecture—no matter how selective the group may be—there will be a difference of understanding of the lecture by every one of the group. Those who have had no experience with the technical subject matter of the lecture will probably understand very little. Others will understand all, and will even supplement the lecture with new and additional meanings not intended by the lecturer. These several abilities to hear the lecture are not necessarily inherited differences, but are due to the apperceptive background of the various hearers. As in the case of the lecture, so it is in reading a book, hearing a sermon, observing a work of art, or listening to a musical program. Each meaningful experience where knowledge is acquired makes a person different, and therefore determines to a large extent how he shall respond in subsequent situations.

School books are now graded according to a child's stock of ideas or abilities. Gradually his knowledge is increased as the proper apperceptive sequences are established. One

would not expect a child of six to do well in history or economics, because he lives in a very small world at that age. As a result of the scientific movement in education all of the materials of instruction are now carefully adapted to the child's level of maturity and understanding.

Apperception and language. Perhaps the chief difficulty in applying the doctrine of apperception lies in the medium of communication. If the teacher should employ the French language in a school room where only English is understood, the results would be easy to imagine. But actually a teacher may use only the vernacular and yet speak in an unknown tongue. Teachers often make this mistake unawares, because small children are docile and do not complain if they misunderstand. Some children do not even know that they misunderstand. They tend to act uncritically upon just any meaning that comes to mind in such cases.

The reader will readily recall the difficulties which children experience with word meanings. The word "fire," for example, may signify to one child a blaze used to heat a room; to another, the burning of a house, the discharge of a gun, or even the discharge of an employee, according to the experience of the child. The word "race" might mean a foot race, a group or kind of people, or a political contest. Almost any word, especially words which represent concepts or abstractions, will be received with varying shades of meaning by any group of children. It must not be taken for granted that children get the correct meanings, even of ordinary words. Many reading difficulties, even in the upper grades, result from a persistent misapprehension of the most common words. A child may read words fluently

but get no meanings because of the lack of facility in dealing with language in written form.

To overcome the language difficulty, much attention must be given to the building of a vocabulary. Small children learn much incidentally and individually, but certain words require careful explanation and illustration by a teacher. Extensive reading is an effective means of accomplishing this end, but oral instruction in the exact use of words is indispensable. The vocabulary must include not only the names of objects, but also verbs, adjectives, and connectives in all of their finer shades of meaning. Truly one's growth in language efficiency parallels the growth of one's apperceptive basis for learning. To meet the language requirement, the teacher and the pupil must speak the same language; the minds of the two must meet on common ground.

What the child brings to school. Each child enters school with certain deficiencies with respect to the apperceptive basis needed to receive instruction. Such deficiencies the teacher must attempt to supply. Any examination of first grade children will reveal that they do not have a knowledge of many of the commonest things. Older people, for that matter, are likewise deficient in this respect.

The children of the first grade reflect their home life more than those of the upper grades who have become socialized. The opportunities differ in the various homes to such an extent as to cause remarkable differences in the apperceptive background of the children. This condition will necessitate more basic experiences in the school room for some children than for others. Not drills, but basic contacts with reality are needed. City children will need contact with materials and objects which are commonplace

to country children. Also the city children will have a vocabulary unknown to rural children.

The child brings to school various ideas, traditions and prejudices which may prove assets or liabilities. His tendency is to interpret what he hears in terms of the type of thinking to which he is accustomed at home. A long time is required to overcome certain types of prejudice and misconceptions. Perhaps it would be easier for the teachers if the parents would also attend school. At any rate, one of the first tasks for the teacher is to become acquainted with the children's apperceptive equipment and seek to supply what is lacking. The same is true of any grade. It must not be assumed that children of a given grade level belong to that level; teaching must begin where the children actually are, not where they are supposed to be.

THE PRINCIPLE OF MOTIVATION

Statement of the principle. Learning is more effective when the learner has a keen, abiding interest in what he is learning. In terms of teaching this principle requires the teacher to cause the pupil to want to learn; that is, to move the learner to action. The key word to this principle is interest, which means literally "to be concerned with." To feel concern for something is to be interested in that thing. It is hardly possible for one to be interested in something about which one has never heard anything. Since all learning must be acquired by the learner's own activity or responses, there must be some way to induce the proper activity. Whether the motivation is brought about by the teacher or by some other agency is unimportant; the principle operates in all effective teaching and learning.

The nature of interest. An individual is by nature concerned with those things which make for the preservation of his own life and that of the race. These include food, clothing, shelter, protection from attack, comfort, security, and the sex urge. If he feels a concern for these things, he is interested in them. The basic drives, which have been summarized elsewhere as hunger, protection, and sex, doubtless furnish the motive power for most of our acts. But it must be admitted that there are higher interests than those of the animal level. These are the acquired interests which should come as a product of true education. These higher intellectual, emotional, and social interests are manifested in the arts, in social work, in religion, and in many other realms of human experience.

The popular expression that a man is "interested in a certain bank or business" is correct usage. It means that he is concerned with the business because he has something invested there and because it means something to him. Now, if a pupil really becomes convinced that reading and arithmetic concern him and will bring him profit in life, he will thereby become concerned or interested in a permanent way. Would the reader surrender permanently his ability to read and write? Then he is permanently interested in these tools. It is the chief business of the teacher to lead pupils to acquire new and higher interests and to discern true values in life, not merely to follow the natural interests on the animal level.

Interest and effort. In the early days of American education the subject matter in education was not particularly interesting. It was apparently chosen deliberately to be uninteresting, because the natural inclinations of the child

were considered evil. In the nineteenth century there arose a new emphasis upon interest which tended to swing to the opposite extreme. Hence the literature became flooded with discussions of "interest versus effort," on the assumption that the two were mutually opposed. It was assumed by some that the work which was interesting was trivial and of a low order. Only hard work or effort put forth on the uninteresting material was worthy of consideration.

It is now generally agreed that interest and effort are not incompatible. The greater the interest in a task the greater will be the effort put forth by the learner, other things being equal. If we consider a goal to be significant or worth while, that is if we are motivated, we are likely to go through great difficulties or even hardships to attain it. It is probably true in general that interest grows with the effort put forth, if the field of study is at all important.

Motives for doing school work. Pupils have various motives for learning. Perhaps these can best be classified as positive and negative. The positive appeals include learning for sheer love of the activity, for social approval, for prizes and honors, for curiosity, to please the teacher or others, and for the value of the outcomes in later life. The negative appeals include the various forms of punishment. These may be fear of the teacher or parents, social disapproval, or of failure to be promoted or graduated.

In the early days of American education, reading, writing, and arithmetic were "taught to the tune of the hickory stick," or by fear of some other kind of punishment. When the motive is fear, the learning is associated with something distasteful and is not likely to be permanent. Superb selections from literature, even including the Bible, have some-

times been permanently spoiled for children because they were forced to memorize them under annoying circumstances as a form of punishment.

Without doubt the various school activities can be so presented and conducted as to cause them to be inherently desirable. A hungry boy needs no prize or reward to persuade him to eat an enticing meal. Psychologically, motivation consists in establishing a sense of need in the learner. It need not be an actual organic need, but merely a felt need. This is done by establishing a situation of tension or imbalance between the learner's present behavior patterns and those patterns necessary to attain a desired goal. For example, children of the pre-school age like to hear stories from books, but they cannot always inveigle their parents into reading them when desired. If such children upon entering school can be led to realize that it is possible for them to learn to read the stories for themselves, then a goal is established which is incompatible with their present attainments. Thus motivation is established, and learning begins. In like manner all of the necessary school activities can be presented as something desirable and worthy of accomplishment. Moreover there will arise at the same time interest and enjoyment in the learning activities as the learner anticipates the goals. Such motivation is in the work itself and is genuine. It is also permanent, because no one who has learned to read, write, or operate the number system would care to part company with these abilities and still try to live in the present world.

From the previous illustrations it should be quite clear why certain learning activities or school subjects seem uninteresting. In such cases the psychological conditions

necessary for effective learning have not been established. Requiring pupils to acquire knowledge or skills which mean nothing to their lives is a hopeless undertaking, if not cruelty. Perhaps their intelligence in this respect is often underestimated. Perhaps they are too often required to put away knowledge in cold storage in anticipation of adult needs which they may never experience. In brief, it is probably correct to say that any activity for which pupils cannot be motivated is not appropriate for the learner. This does not mean that all learning is necessarily pleasant, but there is genuine pleasure in anticipation of what lies just beyond the immediate learning activities.

Motivation varies of course with the age and grade of the pupils. In the lower grades a little different type of appeal is necessary because of the narrowness of the child's world. Later in school life the horizon widens and more permanent interests are possible. The process of socialization becomes important. As age increases and experiences accumulate, various interests arise and motivation problems diminish. After a person's life work has been selected he is presumably self-motivated. The great need then is for intelligent educational guidance. On any level, however, it is well to remember that the principle of motivation operates; there is a motive for everything that a person attempts to do.

Extraneous motives. Genuine motivation seeks to establish the motive in the work itself and not from the outside. The forms of exterior or extraneous motivation include prizes, rewards, contests, and the various types of social pressure. Rewards and prizes may have some justification with very small children if judiciously employed. Re-

wards are better than prizes because the former are within the reach of all. Every one who makes an effort may win a reward. But usually only one child, or a few at best, can win prizes. When one prize is offered, usually a very few become contestants, the majority realizing that there is no chance to win.

Home influences or family honor may be the motive for serious effort in school or even in college. The child may be made to feel that he must uphold the family tradition or standards with respect to education. Such a motive is honorable, to be sure, but it is also an admission that the learning is not desirable in and of itself. All forms of extraneous motivation should be avoided as far as possible, because they are at best only substitutes for better motivation. Exterior forms of motivation will not be needed so much if the teacher himself exhibits interest and a warm enthusiasm in the work which is being done.

THE PRINCIPLE OF PREPARATION OR MENTAL SET

Statement of the principle. Learning is more effective when the learner is in the proper frame of mind. Or, a pupil's response is influenced by his present frame of mind or mental set. This principle is closely related to that of apperception and often confused with it. While apperception deals with the relationship of the learning situation to one's stock of ideas or background of learning, preparation or mental set concerns the *present* state of mind. There are two phases of this "state of mind," the ideational and the emotional. The teacher and the learner must be thinking along the same line in the process of teaching; there must be a meeting of their minds. But in addition to this, there

must be a favorable emotional attitude. A dislike for the teacher may interfere seriously with learning. Any emotional disturbance in the classroom is a potential distraction. It is not enough to be capable of learning; the learner must actually be in a state of readiness to learn. In some way the mental stage must be set for the learning activity. This mental set or readiness to learn is particularly significant in dealing with children, whose attention shifts so easily.

The nature of attention. One of the key words in the doctrine of preparation is attention. Some stimuli such as thunder or gun fire impinge upon us with such force and suddenness that we are compelled to give attention. This type of attention is usually called involuntary, because it requires no effort on the part of the individual. Attention which requires conscious effort on the part of the individual is called voluntary, such as that required to follow closely a lecture. When many stimuli operate at the same time a person usually selects one stimulus to which he attends. A person may be sitting in an audience during a lecture while near him others are conversing, and on the outside of the room a band is playing. One of the three stimuli will usually be selected. If the person selects the voice of the lecturer, we may say that he gives attention to the speaker. Thus attention is a form of selection or mental set.

Irrelevant and absurd answers given by pupils usually result from a lack of attention or mental set. If the teacher shifts too quickly from one topic to another the learner may not be able to follow. In this case the apperceptive sequence is broken. When children return from the playground to the school room, their thoughts continue to run along the line of their play activities. They do not deserve

to be scolded for failure to make a quick transition to other lines of thought. By some appropriate remark, a news item, or some little pleasantry the teacher can facilitate the adjustment. Many words which must be used with children have such broad connotations that they are capable of many interpretations, depending upon the mental set of the pupil concerned. The word "waves," for example, used in connection with a radio, would require a different mental set when used in geography or in the beauty salon.

It should be pointed out that a child may have the proper apperceptive background for a particular idea, thought, or appreciation, and yet fail to follow the teacher's trend of thought. In this case an apperceptive sequence is lacking; that is, the mind is not prepared for the teaching. In making an explanation of a topic it is often necessary to make some kind of comparison. It is useless for the teacher to say "It is like this, or like that," unless the reference touches the learner's trend of thought. In common parlance, the pupil must know what the teacher is talking about. It is quite important, but by no means easy at times, to know just what is in the mind of the child who has difficulty in understanding what is said. In order to establish a meeting of the minds it may be necessary to clear the pupil's mind of a wrong mental set or line of thought. This may often be done by asking the child to state in his own words what his line of thought is.

There are many ways in which a teacher may prepare the learners for his teaching. Usually it will be sufficient merely to recall in a brief statement the matters previously studied and state the topic or problem to be considered next. When an entirely new line of thought or procedure is to

be developed, such as a new process in arithmetic (for example, long division), much care must be taken to make the transition from the processes previously learned to the new situation. Often lessons are presented in such manner as to break all connection with previous lessons, especially in such subjects as history. As a result no continuity of thought exists. The proper trend of thought, or apperceptive sequence, must be established, carefully preparing the mind of the learner for the new teaching. The fact that children try to attend and actually seem to do so does not mean that they are following the trend of thought. Much nonlearning is due to this type of situation rather than to a lack of effort or to inferior mentality.

Sustained application. It is easy to confuse real attention and interest with temporary attraction through curiosity. The proof of a pupil's attention to the task in hand is his sustained application to the work. Attraction through curiosity or novelty is fleeting. The degree to which a teacher can secure and maintain group attention is one of the most important measures of successful technique. For young children the period of sustained effort is relatively short, but to lengthen one's span of attention and application is an important teaching objective.

THE PRINCIPLE OF SELF-ACTIVITY

The principle stated. Pupils learn by their own activities, not by what the teacher does or says. This principle of self-activity or effort operates without exception in all cases of teaching and learning. The teacher can provide the environmental situation, but mental growth is a function of the learning organism. It is a positive activity, not a nega-

tive process of absorption. In accordance with this principle we may say that teaching consists not in doing something to a person but rather in getting the person to do something. Certain types of mechanistic philosophy have done a great injustice to the cause of teaching by assuming that the order of the learning process consists in an outward stimulus acting upon the sense organs, stirring up a commotion in the nervous system, and resulting in a reaction of the helpless organism in the path of least resistance. This philosophy makes man about as helpless as a leaf floating on the bosom of a stream. Practically the reverse of this fatalistic doctrine is true. When a desired goal is established, or some dominant purpose arises, then the environmental situation is reconstructed through vigorous effort or self-activity to suit the needs of the learner. Teachers cannot "educate" children any more than they can grow for them; they must respond and grow for themselves. Teachers can merely supply the necessary conditions.

Pupil activities useful in education. Not all activity contributes to one's education. For example, the activities of cutting and pasting, playing games, or promoting projects are not necessarily educational. Some of the basic types of response useful in learning will be enumerated. The first basic response is speech. The importance of vocal utterance in teaching is recognized when we recall how a person void of speech is handicapped. Also the relationship between language and mental development is known to be very close. When normal speech is lacking, some other means of expression must be devised to carry on one's education.

A second type of response or activity is movement. The motor skills require some form of muscular movement.

On the basis of this form of activity one learns to write, to play musical instruments, to read by moving the eyes in quick jerks across the page, to manipulate appliances, to swim, and do many other acts of skill.

A third general type of activity includes the higher mental processes such as abstraction, analysis, reasoning, organization, and imagination. These are more typically human than the activities employed in learning the skills. In a psychological sense the word "activity" includes much more than physical responses. Listening to a lecture is not a passive performance but a very active one. Reading is an activity of tremendous importance. Reasoning is one of the highest types of human activity. Even making a decision or choice of values and procedures is a form of activity of no mean importance in education.

Teacher-activity and pupil-activity. The so-called modern activity movement tends to be extreme in its emphasis upon child activity. It tends to displace the proper balance between the teacher's activity and that of the child. Too often the promoters of this doctrine have failed to discriminate between activities which are educational and those which are not. Although the teacher's activity does not educate the children, it is nevertheless the chief means of inducing learners to make the proper responses. The teacher is far more important than all of the other phases of school environment combined.

Some writers condemn the lecture or telling system of teaching. It is not a question of whether to lecture, but when and to what extent. In many subjects which require discussion, there is a distinct function for the teacher to perform in bringing something before the learner. To ask

pupils to begin discussions before anything has been presented is like pumping at a dry well. Merely listening to a lecture is a form of activity, but it is hardly adequate to make one's learning effective. There must be self-expression in the form of discussion, writing, and conversation. In the chapter on the rational type of learning, the function of the teacher is more clearly outlined. Inexperienced teachers are prone to feel that merely telling children facts is sufficient, whereas a more vigorous type of pupil-response is necessary to cause the learning to register in changes in personality.

It is not intended here to minimize the importance of the telling system, but rather to indicate its proper place. Often a finer type of pupil response can be secured by proper telling. The telling of stories in an interesting, effective manner is important in the lower grades. The reciting of literature with the proper interpretation by the teacher is a most important means of securing the response of appreciation. Doubtless all of us would rather see a play enacted by real artists than to read the play ourselves. Such performances impress us as nothing else can do.

Teaching how to study. Pupils do not naturally know how to study effectively; they must be taught. Study involves concentrated effort to learn. One of the most common study activities is reading. A part of the program of reading instruction is concerned with teaching children how to read for information and understanding. History, geography, and other science subjects require much of this type of activity. Teaching how to read efficiently is, therefore, teaching how to study. Another important type of study activity is written composition. In situations requir-

ing organization and integration of thoughts and experiences, ability in composition is a great asset. There are known elements, or principles, in composition, and these should be carefully taught as an aid in studying.

Another type of study activity is analysis or abstract reasoning. This activity is prominent in arithmetical problems, and is employed generally in school work. In teaching how to think, the teacher will stress the importance of close attention to and close observation of details, precision in recording data, sustained application, the necessity of keeping the problem clearly in mind, and caution in drawing inferences and conclusions. On the higher levels of the school system the laboratory type of study is prominent. This activity involves the manipulation of apparatus, the observation of phenomena, recording data, and interpretation of results. As with other types of study, these techniques must be taught and learned, and not left to chance.

Many other types of study are employed in the elementary school. Some of these are the study of spelling words, memorizing, learning combinations in arithmetic, and music or art. In each subject, the teacher should give specific instruction, in writing if necessary.

Some illustrations of self-activity. An illustration of pupil effort or self-activity may be taken from the learning of spelling. In studying a word the first activity is to hear the word used correctly in a sentence. Then the word is pronounced by the learner. Next the word should be closely observed, noting easy divisions of the word or perhaps striking peculiarities. Then it is spelled softly or mentally. With the eyes closed the spelling is repeated with an effort to visualize the word and its spelling. Then the word is com-

pared to this mental picture. Next the word is written and the writing compared with the original word to be studied. Finally the word is used in writing a new sentence of the learner's own composition. This activity can be varied or extended as needed, but the illustration suggests the nature of the effort required.

In learning literature various types of activity can be employed. Of course merely reading, or hearing read, a piece of literature is activity, but a more vigorous type of response is desirable. A helpful activity is to paraphrase the selection in one's own words. One may also give one's own version of the piece in writing or orally. For younger people the material may be effectively dramatized as a form of activity. A most helpful activity is found in a conversational hour arranged so as to elicit discussion and conversation relative to the material under consideration.

In geography the principle of self-activity is utilized in many ways. Instead of merely looking at or observing intently a finished map of a region, the pupil may assume a more active attitude by constructing a map as he learns about the region under consideration. In this way he locates the features of the land, the waterways, the types of activity of the natives in living and making a living, the conditions affecting climate, and the natural resources. At the same time spatial imagination is improved by drawing the map true to scale. One readily thinks of examining the products on the shelves of the local grocery store, or of collecting specimens from various parts of the country for use in the school. The resourceful teacher will find many ways of stimulating appropriate activity.

The principle of effort or self-activity is most apparent in

the case of the skills. No one would think of learning to write or to swim by observing the efforts of another. The same is evident in learning to play a musical instrument, or to speak a language. One must make a definite, positive effort in all such cases. Psychologically, however, the principle is just as valid in all the other types of learning, although it is not always so obvious. Learning is a personal matter. It is not a question of what the environment will do for a person, but rather what use the individual chooses to make of his opportunities, or what responses he will make.

Many inexperienced teachers cause this principle to be violated by their teaching procedures. Cases are abundant in which sentences in language work, or problems in arithmetic, assigned for home work and reported next day in writing, have all been done by parents or others interested. Immature pupils may receive the impression that the teacher merely wants the problems to be solved, without realizing that the solving of them is the important thing. Perhaps some teachers are not aware of the difference themselves. At any rate they sometimes inquire, "How many problems did you get, Harry?" In the final analysis the teacher is obligated to select and organize the appropriate learning activities, and then guide the learners with the deliberate purpose of attaining the desired objectives.

THE PRINCIPLE OF INTEGRATION

Statement of the principle. Teaching must center about meaningful wholes. That is, the content of the learning must have significance for the learner. To accumulate a large number of items of knowledge with the hope that these will in some way merge into a unified experience or under-

standing is to waste time and effort. Such procedure does not constitute learning, but rather the acquisition of temporary mental content.

In reading, this principle requires that we begin with words, phrases, and sentences which are significant, and not with letters. In drawing, the child attempts something which to him has meaning and then proceeds to master the detailed parts. In all forms of perception the order is to apprehend the whole object in vague perspective (figure and ground) and then clarify the percept by examining the relationship of the details. In reasoning, the process is essentially the same as far as this principle is concerned. Insight into details of a problem does not go very far if one loses sight of the problem as a whole.

Learning units. Any course of study, or curriculum, which is worthy of the name, consists of learning units or wholes. A unit must be significant, comprehensive, and definite. In history, for example, a unit may be "How the English colonies became the United States of America." Or, a significant aspect of the course might be "How the United States became a united nation." In any case there must be something definite to understand, something significant to learn. In literature, "The short story," or "The modern drama," might conceivably be units, but "Shakespeare," or "Tennyson," are obviously not. Of course a unit whole is relative; a unit in the high school could easily be an entire course in the college. But in either case, the unit must be significant. Where there is nothing of significance to learn, there is usually no learning that is worth while.

The principle of integration is clearly seen in recent attempts to break up the isolated courses of study and to seek

more meaningful groupings. In the nineteenth century Herbart rejected the doctrine of faculty psychology and advocated a type of psychology based upon the unity of mental life. His doctrine of correlation of school subjects followed this point of view and became popular before the close of the century. The principle of integration is in keeping with that general point of view, in that it stresses the importance of the organism in its attack upon the learning objectives. Much nonlearning is due to a failure of the pupil to grasp significant units; he tends to stop with a mass of unrelated facts of detail without arriving at the fundamental understandings and insights.

SUMMARY OF PRINCIPLES

The seven general principles of teaching and learning discussed in this chapter may be summarized by naming and stating each principle.

(1) *Clearly defined objectives.* Learning is more effective when the learner has a definite idea of what is to be done or accomplished. In each learning act, the objectives must be kept clearly in mind. It is quite evident that the teacher as well as the learner must have well defined objectives.

(2) *Direct attack.* Learning is facilitated by making a direct attack upon the objectives rather than by making the approach through rules and definitions.

(3) *Apperception.* A person's reaction to a learning situation is determined very largely by his previous experiences.

(4) *Motivation.* Learning is more effective when the learner has a keen, abiding interest in that which is being learned.

(5) *Preparation, or mental set.* Effective learning re-

quires that the pupil be in the proper frame of mind, or in a state of readiness to learn.

(6) *Self-activity*. Pupils learn by their own responses, and not by those of the teacher.

(7) *Integration*. Effective teaching takes account of meaningful wholes as units of teaching and learning.

EXERCISES

1. Why is it usually difficult to settle down to work just after a vacation?

2. Explain how the direct method of attack can be used in teaching grammar, or language usage.

3. Perhaps you are now interested in something in which you were not interested at one time. Account for the change.

4. The English language contains many words which have two or more distinct meanings, but usually only one meaning comes to mind when one of these words is encountered in reading. Why is this?

5. Is there any truth in the statement that some of the poorest teaching to be found anywhere is done in our universities? Explain.

6. In listening to spoken language there seems to be a crucial point at which meaning is grasped. It may be early in the sentence or later, or it may be in a succeeding sentence. Why is this?

7. Is there any psychological justification for having a regular place to study?

8. Why do children's interpretations of cartoons and motion pictures differ widely?

9. What principle is violated when a teacher accepts as learning a mere repetition or recitation of material in a textbook in history?

10. Evaluate the statement that the more one knows the more one can learn.

11. A teacher once said: "I could have learned more in my course in principles if I had taken it after I did my practice teaching instead of before it." Explain.

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CHAPTER VI

THE PRACTICE TYPE OF LEARNING

IN THIS chapter will be presented the first of a series of three types of learning and teaching. These types are differentiated from one another on the basis of the learning activities involved, and not on the basis of what the teacher does. Ordinary observation reveals that certain learning activities are characterized chiefly by an element of practice, although they may differ considerably in other respects. For convenience these learnings have been classified on the basis of this common element and called the practice type of learning. Not all learnings of this class can be considered here, but enough cases will be discussed to illustrate the principles involved. The first problem is to examine the general processes of learning involved. This will be followed by an attempt to identify the learning products or outcomes. Finally the principles underlying the teaching procedures in this type will be illustrated from certain of the elementary school subjects.

THE PROCESSES OF LEARNING

Identification of the type. In order to classify learnings into a type there must exist some common characteristics of significance. Obviously the learning of history is different from learning to write or to swim. A close analysis reveals

that many subjects, especially in the lower grades, are acquired as a result of practice. It should be observed that practice is not the same as repetition or continuous effort. Practice means progress in learning which comes as a result of repeated efforts or trials. For example, a person makes daily attempts to acquire skill or efficiency in typewriting. Each day he does not begin where he did the day before but on a new high level. His advancement from trial to trial is practice; it applies chiefly to the skills. Subjects or learnings within a subject which are acquired by practice through repeated attempts to imitate a model or demonstration may be included in the practice type of learning. Some of the subjects involving learnings of this type are spelling, handwriting, drawing, musical performance, arithmetical operations, learning to read, and typewriting. Here as in all cases of learning the pupil must establish a goal of performance. This idea of what is to be done is furnished by the teacher in the form of a model or demonstration of what is to be accomplished.

The repetition fallacy. The word repetition applies more properly to certain reflex activities in which one does approximately the same thing over and over again. But in acquiring a skill this is not the case. Each trial is different from the others, if learning is taking place. It is quite clear that mere exercise of a function does not necessarily increase efficiency in that function. A wheel or some other piece of machinery repeats its performances almost to perfection, but this activity is not a picture of learning. Reflexes operate repeatedly in the same manner but no learning results. Any theory which explains learning in terms of a deepening of brain paths is not in harmony with the facts. Even the so-called drill

subjects do not require this kind of activity, but rather a form of growth of the organism.

Insight. An important element in acquiring learnings of the practice type is known as insight. Contrary to popular opinion, insight is not a native trait which one always has or does not have. In any learning situation, regardless of the type of learning, a person is said to manifest insight who tends to note significant details of the situation as a whole, whether consciously or unconsciously it does not matter, and to act accordingly. What many people call intuition is merely a form of insight. Women are proverbially said to possess a high degree of intuition, especially with respect to perceptual situations of a social character. Let a stranger call at a home. The man of the house will perhaps take one quick glance at the visitor and then proceed to listen to what he has to say without a close scrutiny of the caller. The woman, on the other hand, will usually note the details of the visitor, observing every movement and mannerism. She may not be able to repeat so well what the visitor said or argued, but she will more nearly discover his motive, his sincerity, and his general dependability. At any rate, her mind will be made up first regarding these matters. She will note the way he speaks and what he does while speaking, more than what he actually says. These details provide the so-called intuition.

Insight in learning the school subjects can be illustrated in different ways. Take for example the question of the natural causes of winter and summer. In winter when we experience our coldest weather, the sun is actually closer to us than in the summer. Since our heat comes from the sun, how are these facts to be harmonized? Similarly one ob-

serves at any season that it is cooler mornings and evenings than at noon. But so far one important detail has not been noted, namely, that in summer the rays of the sun are more concentrated on a given area of the surface of the earth, because of the angle at which they strike the earth. When this detail has been noted, the whole problem becomes clear in a flash.

In the practice type of learning, also, insight is common. The solution of certain mechanical puzzles is simply acquiring a series of insights in a given order. To miss one link in the series is to fail to solve the puzzle. Therein is a value of trials and attempts; not that they advance the learning as such in the case of puzzles, but they afford the occasions to gain insights. In arithmetic we are dealing with an abstract number system. Number facility is not merely a matter of repetition or drill, although these have an important place. Each figure or digit, each operation bears a relationship to the number system as a whole. Learning is more rapid in the fundamental operations if the learner notes the details of this relationship, rather than becoming a slave to repetition and drill. In addition, for example, if the total of the first column is 42, one may learn to "put down 2 and carry 4," but it is better to observe that one actually carries 40, which in the second column is equivalent to 4, according to the structure of the number system. This insight into the place values of the digits will clarify many other situations in arithmetic, such as the use of decimals. When meaning is thus injected into learning situations by gaining insights, much of the usual drill will become unnecessary, and large transfer of learning will also occur.

Organismic action. Some confusion has arisen from at-

tempts to explain skills by an analysis of the stages of learning supposedly involved. For example, the stages in learning handwriting have been set forth about as follows: (1) initial diffuse movements or crude attempts to imitate models; (2) development of perception of forms of letters; (3) elimination of wrong or useless movements and the fixation of the correct ones; and (4) coordination of the movements and the visual and tactual elements into a unified response pattern.

The achievements indicated in the stages given in this analysis undoubtedly occur before the final learning is accomplished. Furthermore, this type of approach to an explanation is useful in suggesting the nature of a sensorimotor skill, but it may leave the impression that the learning occurs in that order, the mastery of step by step by an indirect process of attack upon the objectives. The fact is that handwriting like all other phases of learning is acquired by making a direct attack upon the objectives. In other words, a pattern of response is desired as a goal, which has been established through motivation. The child makes the best response of which he is capable in imitation of the desired activity. A spoken language is a good example. He does not at first attain to the efficiency of the model, but in making the direct attack he is so changed as to make the situation appear different for the next effort. Again and again attempts are made to master the whole situation, and at the same time difficult details or parts of the process gradually disappear as the organism becomes adjusted to the new type of behavior. Such elements or details as perception of letter forms, elimination of errors, fixing right responses, coordination of movements and sensations are taken care

of simultaneously in the unified response of the organism. It is believed that this type of explanation will hold for all of the learnings belonging to the practice type.

THE LEARNING PRODUCTS

The importance of knowing what outcomes or learning products should be expected from various learning activities was emphasized in the second chapter. In making an analysis of learning in the different types it is helpful to identify the learning products peculiar to each type. In the practice type these will usually be identified as habits, skills, and arbitrary associations. Other descriptive terms may be applied, but it is believed that these are sufficiently inclusive.

The use of the word habit is much more restricted here than is usually the case in textbooks. Habit is an acquired mode of response which is relatively uniform and so automatic as to require little or no consciousness in its performance. The term should not be applied to all learnings indiscriminately, as some are inclined to do. Some call handwriting a habit, but such loose use of the word is unwarranted. Handwriting is a sensori-motor skill, although people have *habits* of writing of which they are probably unaware but which constitute distinguishing characteristics of their style. Writing itself is a skill which requires a considerable degree of consciousness and concentration.

Habit is noticeable in a person's speech. People long habituated to incorrect speech forms will revert to these forms after they have consciously practiced correct forms. The pertinent point is that they do not know that they have reverted to the old practice or habit. Personal peculiarities or mannerisms are forms of habit. All are acquainted with

the processes of habit formation in infants and very small children. They are easily induced to adopt certain forms of behavior which govern their routine matters without much consciousness on their part. Many useful habits can be formed in the schoolroom, such as removing the hat in the house, speaking to people in a polite manner, hanging hats and wraps in order, keeping desks and floors clean, brushing the teeth, and so on.

Habits may be of a more intellectual nature. One can form good or bad habits of study. One can actually form a habit of depending upon others to do one's work, or one can become habituated to doing one's own thinking. Many pupils continually exhibit a poor type of work because they have failed to form a habit of precision, neatness, thoroughness, and promptness. The tragedy of such a case is that people are usually unaware of their besetting habits. The school is a good place to learn to substitute desirable habits for the undesirable, but not all profit alike from the experience.

Let it be emphasized here that habit is not the same as conditioning. The craving for strong drink or cigarettes is not habit but a result of conditioning. There are, however, certain habits connected with alcoholism or smoking. The body has been so conditioned to the effects of these stimuli that a need is actually felt when they are not supplied. Clothing in winter could be omitted from the body as well as from the face and hands, if people cared to condition the body to weather conditions. Some so-called conditioning is not such at all. The well-known Pavlov experiment with the dog, for example, is not conditioning (except the motivation device, hunger), but is a form of associational learning in

which parts of a situation recall the whole situation. Conditioning as a rule is not complimentary to a person, since it suggests situations and responses beyond one's control. It is not the same as learning or education, but actually works to the contrary. Education liberates a person, rather than binds him to a slavish performance.

The second learning product includes the skills. Of these there are many, all differing in details but alike with respect to the chief learning processes involved. A skill differs from a habit in that a skill is performed with a higher degree of consciousness and concentration. Skilled performances require close attention as a rule. While reading a newspaper one cannot write very well, yet one can walk, or sit in some habitual position. Observe a skilled musician or surgeon at work and note the concentration of thought and energy. A second differentiation from habit is the fact that skilled performances differ more from one to another than do habitual performances. The skilled workman has his moods, his off moments during which much variation of performance occurs. The least disturbance or distraction makes a difference. It requires no particular skill for the writer to put on his coat, but habit decrees that he shall invariably put his right arm in first.

A skill signifies a refinement of response, a highly efficient performance. It is the outcome of the learning processes previously described. Ordinarily the word refers to motor skills, but it is not limited to these. High efficiency or expertness in any type of performance may be called a skill. But for the purposes of this discussion it will be restricted to efficiency in such activities as handwriting, drawing, construction, typewriting, playing a musical instrument, play-

ing games, manipulating tools, apparatus, or machinery. In each case the skill is the culmination of a series of practice periods in which a conscious effort was made to learn.

The third type of learning product includes the arbitrary associations. These are neither habitual nor neuro-muscular. They are associational learnings without any logical relationships. Spelling is an example. Letters are associated in the word in an order which is conventional but not logical. Also the whole word is associated with its meaning. There is no skill about it; one either does or does not make the proper associations.

The same is true in beginning reading. The child arbitrarily associates the word "cat," for example, with a small, fuzzy creature which moves and is gentle. The written word "bread" is associated with something to eat. French people use the word "pain" to refer to the same thing, showing the arbitrary character of the associations.

In arithmetic one learns to associate arbitrarily the plus sign with the process or idea of addition, and the minus sign with the process of subtraction. Other symbols could have been adopted just as well. So also with the other symbols peculiar to arithmetic and higher mathematics. In fact the digits themselves are merely symbols arbitrarily associated with certain ideas or quantitative concepts. The Romans, for instance, used different symbols from those of the Hindu-Arabic system.

The association of facts or bits of knowledge illustrates arbitrary associations. To know that George Washington was the first president of the United States is merely to associate the two ideas, Washington and first president, in such a way that when one is mentioned the other returns to con-

sciousness as a part or phase of a previously mastered situation. Learning the names of trees, flowers, or people is a like process. In this kind of learning, the practice occurs in the repeated attempts to grasp the whole situation, of which the associated elements are only constituent parts.

PRINCIPLES RELATING TO SPELLING

For purposes of illustration, attention is now called to the fundamental principles relating to the teaching and learning of certain subjects belonging to the practice type. No attempt will be made to outline elaborate procedures or to suggest appropriate materials of instruction. These belong to courses in special methods and materials. In beginning the analysis it may be stated that the objective in spelling is the ability to write correctly the words which are most commonly used in writing. The social, legal, and commercial demands for spelling are such that correct spelling has become a mark of the educated person. A word wrongly spelled in a legal document may make quite a difference. In social intercourse poor spelling amounts to a discourtesy, and may even result in a kind of ostracism.

Spelling as a form of arbitrary association consists in the conventional arrangement of letters to form a word, and the association of the word with an object or meaning. Since spelling is largely unphonetic, rules for spelling have a very limited application and perhaps should not be stressed at any grade level.

Assuming that the objectives are clear and the 4,000 or more words to be learned in the grades have been selected and classified, it is appropriate to inquire concerning the learning activities of the pupils. The experience of a pupil

with a word in spelling occurs somewhat as follows: (1) the auditory experience, or hearing the word used in conversation or in a sentence; (2) the visual experience, or seeing the word written or printed; (3) the vocal experience, or correct pronunciation and oral spelling of the word; (4) the kinaesthetic experience, or writing the word; and (5) experience in the use of the word in original sentences. These experiences should result in a clear, accurate, and meaningful perception of the word.

In the pupil's independent study of difficult words the same principles apply. Having had experience with the use and pronunciation of the word, he will observe the word closely, noting its appearance as a whole, its prominent parts or syllables, and the order of the letters. Then he will recall the visual image of the word, repeating softly the letters as they are visualized. Special attention will be given to the difficult parts. It is best to have well in mind the order of the letters before attempting to write the word. The word will finally be used in original sentences. Since pupils uninstructed do not know what it means to study a list of words, it is well to give them in written form or on the blackboard the specific activities desired during a study period.

Certain principles governing the teaching of spelling have been implied in the preceding paragraphs. The first is to begin with meaningful wholes. The sentence or conversational setting gives the word its meaning. Then the details are mastered, such as noting peculiarities and syllabication, learning the order of letters, and overcoming writing difficulties. A second principle is motivation. Most children are affected by social approval or disapproval. The impres-

sion must be made that efficiency in spelling makes a difference and merits approval. Appeal can be made to the pride of the learner in most cases. And finally the learner's efficiency is increased by knowledge of his progress day by day.

In case of special difficulties in spelling, a plan of diagnosis and remedial teaching must be devised. Some of the common causes for poor spelling are listed below.

poor penmanship	faulty hearing
false associations	faulty vision
carelessness	poor study habits
faulty speech	poor enunciation by teacher.

Some of the types of errors resulting from these causes are:

- addition of extra vowel (farme for farm);
- omission of vowel (parliment for parliament);
- transposition of letters (nickle for nickel);
- failure to distinguish consonants having same sound (sinder for cinder);
- use of wrong vowel (portible for portable);
- dropping final "e" (promenad for promenade);
- incorrect use of capitals (tuesday for Tuesday);
- failure to double a letter (begining for beginning);
- spelling by sound (shure for sure).

No single prescription will remedy all of these ills. Much good may be accomplished if the teacher will call special attention to the difficult parts of the words by displaying them on the blackboard. Drill on certain sounds and peculiar pronunciations will help. The poorer spellers will have to attempt less work than the others. Dictation lessons employing the difficult words will afford suitable practice. In this way opportunity will be afforded for the pupils to hear the words correctly pronounced and well enunciated.

Of course the visual and auditory defects in pupils will have to be reported to parents for correction.

Not all word forms need to be taught. Experimental evidence shows that transfer of learning takes place. Clifford Archer * found that positive transfer occurs in about equal amounts between the base forms of words (for example, work), the *s*-forms (works), the *ed*-forms (worked), and the *ing*-forms (working). He infers from the study that it is not necessary to teach all of these forms. The attention of the pupils, of course, must be called to the uniformities at which transfer may take place.

PRINCIPLES RELATING TO HANDWRITING

In spite of the invention of various kinds of writing machines, there continues to exist a demand for handwriting. The individual signature is still demanded on commercial paper. Intimate, personal correspondence is done by hand to give it individuality and warmth. In countless other ways in modern life handwriting is deemed preferable.

The teacher of handwriting will gain a new appreciation of this highly developed modern art by a study of the development of handwriting systems. It is a long story, but only a brief sketch can be included here. Writing makes us heirs of all the ages. Without it we would have no accurate means of becoming acquainted with the great masters of art, literature, science, philosophy, and religion. Educational psychologists have underestimated the importance of writing as an instrument of thought. It widens one's span of consciousness and thereby aids in the organization of thought. It

* Clifford P. Archer, "Transfer of Training in Spelling," University of Iowa, *Studies in Education*, V (June 1930), No. 5.

clarifies thought and tends to develop accuracy and precision in language.

One is overwhelmed in contemplation of the multiplicity of forms used in writing by the peoples of today and of the past. For our present purposes let us review briefly the stages in the development of the art of writing as investigations have revealed them. Archaeological discoveries reveal the antiquity of language and writing. While language seems to be the more ancient, it is clear that writing must not have had a much later beginning. Ideas needed to be recorded for future use, and communication at a distance had to be effected. These conditions necessitated some form of substitution for vocal sounds which are effective only in direct perceptual situations.

Pictography. From such excavations as have been made and from fragmentary evidence discovered in ancient caves, it seems that at least certain forms of primitive writing were drawings or pictures. Simple picture writing is called pictography. In the ancient pictographs the people succeeded in recording simple ideas which could be read or interpreted. A picture of a knife sent to an enemy tribe might mean that war had been declared. War could be indicated also by a picture of a column of soldiers. Pictographs are limited to concrete situations, or to the low level of sensory experience. Abstractions are not easy to portray to the eye; in fact all pictures involve a large subjective factor in interpretation.

Hieroglyphic writing. The word "hieroglyphics" signifies "sacred writings cut in stone," although some of these writings were evidently not sacred. The hieroglyphic writing of the Egyptians remained a mystery to the western world till a key to it was found in 1799 A.D. by the discovery

of the "Rosetta Stone," which is now in the British Museum. Hieroglyphics probably grew out of picture writing, just as did the cuneiform writing of the Babylonians, Syrians, and other peoples of the valleys of the Tigris and Euphrates Rivers. The word "cuneiform" comes from the Latin "cuneus," meaning a wedge and alluding to the wedge-shaped characters used in writing. Both of these forms represent a stage of writing in advance of pictography, because the pictures of animals, for example, now observed in hieroglyphics no longer have any reference to animals but have come to stand for certain thoughts. That is, the early picture forms have at this later stage lost their original shapes and meanings, thus marking a step in advance.

Ideographic writing. Another form of writing later than pictography is the ideograph or ideogram. This is a written idea. For example the Chinese wrote the idea "bright" by drawing the sun and moon together in one picture. Note that the idea expressed is not that of sun or moon as such but merely the abstract idea "brightness." Since the original concrete objects were not a part of the idea expressed, the symbols or drawings gradually changed for convenience in writing so as not to resemble these objects any longer. The brushes used in the writing were so wide and crude that refinement in drawing the characters was no longer possible. Ideographic writing systems are cumbersome and tend to retard the thinking of people using them. They necessitate the learning of thousands of complicated signs independently in order to communicate in the simplest manner.

Phonetic alphabet. The final stage of development is the phonetic alphabet. The word "alphabet" is of ancient origin. Some think the word originated with a people living on the

peninsula of Sinai and was transmitted to the Greeks by way of the Phoenicians. These Sinaitic peoples, or more particularly these Seirites, are thus credited with using what corresponds in sound with "alph," which stood for "ox," and "bet," which meant "house." These were supposed to have been among the first symbols developed, and thus their sounds correspond to the first two letters in the English alphabet, A and B. The Greeks called them Alpha and Beta, from which our word "alphabet" is derived. Strangely enough, the *picture* of the head of an ox and the quadrilateral representing a house, according to this theory, furnished the early forms of our first two letters. In a similar manner the other letters developed from natural objects till the system was complete, the vowels apparently being a contribution of the Greeks in a later period. Certain changes have occurred in passing from the Greeks to the Romans and to the English-speaking peoples. It should be emphasized that writing systems are the results of efforts of social groups to cooperate and to preserve certain ideas and records. Writing thus serves as an intellectual device in promoting human progress. Our alphabet has the unique advantage of having only a small number of characters, there being only twenty-six in the English, and a correspondingly small number in other important modern languages. These are combined to represent an amazingly large number of thoughts and ideas. Let it be remembered, however, that the individual letters have no meanings and cannot, therefore, be used as perceptual units, as were the original pictures, in learning to read.

Modern handwriting. Handwriting as taught today is a complicated sensori-motor skill. Various forms of move-

ment are required, and at the same time these must be coordinated with or adapted to the sensory element of vision. An attempt to trace a star or any other irregular figure by observing one's pen in a mirror will reveal the importance of this coordination. A disturbance of any of the coordinated elements affects the skill and necessitates a new coordination or learning.

The teaching of handwriting, like drawing, must not be approached analytically or by attempting to master the elements or details step by step. It must proceed from crude, meaningful wholes (words) to the mastery of the elements (letters, lines, and curves). The refinement comes through differentiation, as perception of form is gradually achieved. This is certainly true in cursive writing, and probably applies to manuscript writing as well. Many eminent authorities advocate beginning with manuscript writing, in which the letters are distinct and disconnected, with a gradual transition to the cursive system in the second and third grades. Whatever may be the advantages of manuscript writing to the pupil in reading and otherwise, it still remains for the pupil to learn cursive writing, and it may even cause letter consciousness to such an extent as actually to interfere in reading rapidly. The writer is inclined to think that writing should be learned by direct attack upon the final objective, that is, the form which is to be employed throughout life, without any intermediate stage.

Speed and quality should be developed together. Standards for these are furnished with the various scales for measuring handwriting. The class median at the end of the sixth grade should be at least 60 for quality and 70 letters per minute for speed. (Ayres Scale.) Some have contended

that it is best to develop good form or quality first, then emphasize speed. Since speed and quality are not separate learnings but a coordinated whole, learning them separately would merely hinder. In case one of these phases tends to develop at the expense of the other, the teacher should give more attention to the one which is the lower, according to the standards.

Since handwriting is supposed to be read and not used merely for ornament, it would seem that legibility alone should determine its quality. In measuring quality the most popular scales have used the basis of legibility alone. But for purposes of instruction it is essential to point out to the learner just what constitutes quality or excellence. At least five elements enter into quality or legibility of writing. These are (1) slant, (2) alignment, (3) letter formation, (4) quality of line, and (5) spacing of letters and words. Analytical scales and score cards are available for measuring efficiency with respect to these elements. It is most important to teach the pupils to analyze their own writing in the light of the standards and to observe their progress from time to time.

Analyzed from the standpoint of visible *results* of practice in handwriting, the overlapping stages of progress seem to be as follows:

- (1) The learner makes a large number of incorrect and useless movements. At first he may even move his feet, his head, or even roll his tongue.
- (2) By a process of trial and success the proper movements are selected and facilitated.
- (3) By continuous imitation of models perception of form is gradually developed and errors eliminated.

- (4) Next comes the level of skill, when the writing becomes sufficiently automatic for the learner to shift attention from the details of the movement to the thought expressed.
- (5) The final stage is the development of one's style or peculiar manner of writing.

As previously explained, these steps are not to be considered levels in the learning of handwriting; they develop together as phases or differentiations from the original crude efforts to imitate models.

Certain details of position and movement should be observed. The pen is held between the thumb and the first and second fingers, passing the second finger at the root of the nail, the first at the knuckle joint, with the end pointing to the shoulder blade. The hand rests upon the third and fourth fingers as the pen moves across the page. The arm lies flat on the desk, the elbow remaining off the edge of the desk. The paper is inclined at about 30 degrees with the edge of the desk, the arm being perpendicular to the edge of the paper. With body erect the feet should rest flat on the floor.

There is some controversy concerning the value of "muscular movement" in writing. This system uses a minimum of "finger movement" and emphasizes the use of the muscle on which the arm rests while flat on the desk. Small children do not have enough muscle to get best results from this plan. Moreover, experimental evidence indicates that the so-called muscular movement is not essential to high efficiency in writing.

Rhythm is considered necessary to good writing. This involves an evenness or smoothness of the movement and insures better formation of letters. Making strokes to count-

ing can be of aid in developing rhythm. If this is attempted for a whole group, it may involve difficulties of individuality comparable to those experienced when reading in concert is attempted.

Finally it may be suggested that short periods of practice are desirable, usually 10 to 20 minutes, depending upon the grade. A short period daily is preferable to a longer period only once or twice a week. And of course regular practice in writing is to be preferred to formal drills. Drills are necessary only when some particular difficulty is experienced.

PRINCIPLES IN ARITHMETICAL OPERATIONS

Most children find number work difficult because at an early age they are required to employ higher mental operations in dealing with a highly abstract number system. The teacher will be more sympathetic with them if he has some idea of the long struggle which society had in perfecting our number system. Some of the significant facts in the story of numbers will be given in the hope that the reader will make further investigations. The number system is more than mere writing or quantitative symbols; it is the foundation of a system of precision in thinking.

Primitive concepts. As with the other intellectual instruments, the use of numbers dates far back into antiquity. In some respects the development of a number system parallels the growth of number concepts in a child. Both are of a primitive, simple order. Long before the child can count, he recognizes quantitative differences such as large and small, many and few. Likewise, he applies names to objects or persons as a kind of one-to-one correspondence before he can actually enumerate such objects or persons. Far back

in racial history the shepherd called each sheep by name or removed a pebble (*calculus*) from one bag to another for each sheep. By this means he could determine when all the sheep were in the fold without employing the abstract process of counting.

Counting. With the beginning of counting a transition is made from the lower perceptual behavior to the higher mental operations. Numbers are not concrete objects or experiences but merely attributes isolated by a process of abstraction. Before certain early peoples learned the use of number names, the fingers were used as counters, illustrating the abstract nature of numbers. It is thought that our decimal system, or "system of tens," came from that practice. Significantly enough, the word *digit* means *number* and also *finger* or *toe*. Another counter was the pebble, which in Latin was "*calculus*." The word *number* comes to us from the Latin *numerare*, meaning *to count*. Farther back the number names "one," "two," "three," and so on, can be traced till the story is lost in antiquity. The early counters were concrete, but the use of number names marked a step towards an abstract system of counting.

Many number systems have been discovered which were used by different peoples of the east. Most of these had little or no direct influence upon the practices in the west. The Babylonian system has influenced our calculations in certain respects, especially in astronomy. The Roman system was in use in Europe till the sixteenth century A.D., but this system, like those of the east, was cumbersome and poorly adapted to work in arithmetic and higher mathematics.

Our system, which is now quite generally used, is known as the Hindu-Arabic system. This system with its nine

digits and the zero operating on the basis of place values is well adapted for use in the modern world of science and mathematics. The origin of the zero is not known, but it probably came to Europe from India. Inscriptions indicate that the zero was used in India late in the ninth century A.D. The Arabs are thought to have brought the system to Europe after they had obtained it from the Hindus. Arab traders used the system along the Mediterranean Sea, thus spreading the knowledge of it to the continent of Europe. Also, wandering Arabs came by way of Africa into Spain, where they used the system in their flourishing civilization from the eighth to the thirteenth centuries. Through these and other agencies, such as the crusaders, the system spread over Europe and came into general use in the west by the sixteenth century. It was perhaps no mere coincidence that modern science arose at the same time, because just such an intellectual tool of precision is indispensable in modern science.

In the course of human history, man has felt the need for devices to measure land, to weigh products of the soil, or to calculate exchange values. In these and countless other matters involving quantitative relationships man has obtained experiences with number concepts. By means of a number system these experiences have been systematized in the mind of man and called arithmetic. In fact, arithmetic is a system of precise thinking, or a process of arranging quantitative concepts with reference to a number system.

Combination. After a pupil has learned to count, as previously explained, his next hurdle is to master the science of combination. Addition and multiplication are correlative processes, in that multiplication is a short process of addition. Likewise, division is a short process of subtraction. All four

processes consist essentially in rearranging numbers in a system. Much time and labor in useless drill can be avoided if pupils can become conscious that they are dealing with a number system. No rational attitude, however, can take the place of practice in gaining facility in the manipulation of the fundamental operations. To know that 9 times 6 equals 54 in terms of a system is one thing; but immediately to respond 54 to the stimulus 9 times 6 is quite another matter.

Much drudgery and failure in arithmetic are occasioned by certain teachers who are slaves to drill. Drill is not instruction; the two must not be confused. Often it is not drill that is needed but enlightenment. Too often children are required to solve long lists of problems by rules or formulas held in memory, whereas much of the time could be spent more profitably in discovering the number relationships with reference to a system. When numbers are taught intelligently, from one fourth to one half of the addition and subtraction facts need not be specifically taught but left to transfer.

Several studies point to the fact of transfer in this connection. Olander* found experimentally that children who were taught only 110 addition and subtraction facts knew as much on the final tests as those who had been taught 200 facts. He attributes the result to transfer of learning as a result of teaching the facts in relation to a system.

In elementary number work it is necessary to follow

* H. T. Olander, "Transfer of Learning in Simple Addition and Subtraction." *Elementary School Journal*, XXXI (1931), 358-369, and 427-437. See also J. R. Overman, *An Experimental Study of Certain Factors Affecting Transfer of Training in Arithmetic*. Baltimore: Warwick and York, Inc., 1931.

closely the mental operations of the learner. When work is written and the papers collected for correction by the teacher, only the *results* of the thinking may be examined. By the oral tracing process the teacher, in case of special difficulty, can follow the mind of the child step by step and discover where his thinking goes astray. Excellent diagnostic tests for this purpose are now on the market. Such diagnosis of processes reveals all kinds of irregularities and absurd ideas in the simplest work in numbers.

Children must be carefully taught the language of numbers. Many errors and failures in arithmetical operations as well as in arithmetical reasoning are due to a language difficulty. General reading disability is a handicap always, but the learner's difficulty may be confined to the language of numbers. Considerable oral instruction must precede the use of written symbols. The number names also will precede the number symbols in written number language. Perhaps the greatest source of error is the language which indicates the processes required. For example, such words as "greater," "more than," "less than," "take away," "product," "sum," "quotient," "remainder" constitute a real language challenge for the beginners in arithmetic. Time is well spent in asking pupils to give an oral analysis of problems and tell what steps must be taken to solve them, rather than in consuming all of the time with calculations in writing.

When sufficient instruction has been given and drill is desired, certain precautions must be taken. Drill should be rapid enough to challenge all and to prevent loss of group control. To prevent monotony it should be varied as much as possible. The teacher should see that responses are correct before drill is applied, and then the emphasis must be

on the points of greatest difficulty. Drill can be intensive and at the same time conducted in a happy sense of good humor. The drill will be more effective if the periods of practice are spaced and are not too long. Actually the drill period should close before any signs of fatigue appear among the pupils. There is no justification for the notion that long, hard hours of drudgery are necessary for effective learning.

PRINCIPLES IN READING

An individual is extremely limited as to the number and variety of experiences which he can acquire directly through sense perception. Not many people can travel extensively and gain firsthand knowledge, nor would time permit one to explore all of the earth. One cannot learn directly from the great thinkers of the past. One must, therefore, substitute some kind of vicarious experiences if the great storehouses of art, wisdom, knowledge, and culture are to be unlocked. Reading furnishes such a key. If writing is the producer's side of language, then reading is the consumer's side. Thus reading functions as an indispensable tool in the promotion of thought and civilization.

The preparatory stage. Certain evidences of reading readiness should precede the actual teaching of reading. It is highly desirable that a child have a large and varied spoken vocabulary, and a still more extensive recognition vocabulary. The pre-reading stage must, therefore, afford a rich variety of experiences with things and ideas so that correct perceptions may be built up. An ordinary family life will furnish the child with a fair stock of words and ideas. Ideally these experiences need to be supplemented by the highly selected

and controlled environment of the nursery school and the kindergarten. Here the background of the child's experiences is so systematically built up that he has an effective apperceptive basis for beginning to read.

The readiness of a child to begin reading can now be tested objectively. A prime consideration is the physical basis. If there is some defect of vision or speech, corrective measures must be sought first. Simple classroom devices are now available for detecting faulty vision in children, such as imbalance of the eyes and astigmatism. Some of the better reading-aptitude tests include exercises to measure the following: speed of articulation; auditory memory; visual memory of orientation of forms; ocular-motor control of attention; speed; word discrimination (oral); phonetic discrimination; articulation; and vocabulary. One device consists in comparing a single word with a row of words, all having a common characteristic except one. The problem is to find the one which is different. This is not reading but a test of one's ability to observe and differentiate forms. Geometric figures may be used instead of the words. If one cannot discern the differences between the words or the figures, the probability is that one is not ready to read. Tests of intelligence reveal that a child of five may have the mental maturity of a child of six or seven, or more, whereas a child of six or seven may not be mature enough mentally to begin reading. All of these evidences and others which might be secured enable the teacher to know when a child can profit from reading.

Learning HOW to read. If the child is physically fit, has attained a mental age of at least six, and has an adequate apperceptive background, he is probably ready to learn how

to read. It may be stated as a fundamental principle in beginning reading that the smallest *perceptual unit* is the word, not the letters. In ancient picture writing each picture was necessarily treated as a separate perceptual unit. When the phonetic alphabet was evolved and the pictures were replaced by meaningless characters or letters, the perceptual unit in reading had to be the word. The alphabetical approach to reading, nevertheless, continued to be used by most teachers till about the middle of the nineteenth century. Psychologically, the procedure is from significant wholes (words) to the differentiated parts (letters and syllables). Moreover, experimental investigations reveal that words can be recognized farther than letters composing them, and that words of four letters are named more readily than single letters. Words can be recognized even when composed of letters too small to be recognized individually.

Reading consists in the perception of abstract symbols and the formation of arbitrary associations of symbols with the ideas for which they stand. While words are perceived in terms of experiences, letters are perceived only in relationship to one another as a means of identifying words. In the early reading stage, words are perceived by sight without reference to letters and syllables. Obviously, these sight words must be such as are already in the child's spoken vocabulary.

Attention must be given to the physical basis for reading. The eyes must adjust so as to present a clear image on the retina. To secure this result the light must be adequate and free from glare. The reading material should be held at the proper focal distance from the eyes and perpendicular to the line of vision. It must not be assumed that it is an easy

matter for a small child to learn to move the eyes along a line from left to right and to make the return sweep to the next line. This is a skill requiring considerable caution by the teacher. There are two types of *eye movements* as revealed in laboratory investigations of reading. The sweeping movement is used in following a moving object. The second type of movement is that used in reading. The eyes do not move in a smooth sweep across the page in reading, but they make a series of quick movements and fixation pauses. At the fixations the perception takes place. By means of a mirror held at the side of the reader's eye, one can observe these fixation pauses and count them for each line read. More accurate work of course is done by photographing the movements with the regular laboratory apparatus.

In order to teach effectively one must understand the *fundamental elements* in reading. One of these elements is the visual span, or the amount apprehended at one fixation pause. This is measured in terms of letter spaces (counting letters, punctuation marks, and spaces), taken in at one glance. The larger the visual span, the fewer will be the fixation pauses per line. Another element is the rate of recognition, as determined by the average duration of the fixation pauses. The fixation pauses of the slow reader are not only more numerous but of longer duration. A third element is the regularity or progressive sequence of the perceptions along the printed line. This is shown by the average number of regression movements per line. A fourth element is the eye-voice span in oral reading. This is measured by the number of letter spaces between the fixation point of the eyes and the word being pronounced. A good

reader maintains a wide eye-voice span. One sixth grade reader showed an eye-voice span of 14.9 letter spaces, while a second grade reader showed only 3.4.

Many important advances in the psychology of reading have been made through the eye-movement techniques of research. Only a short time is required to obtain a fair estimate of a child's level of maturity in reading. The mature reader is easily distinguished from the immature reader by the elements previously described. That is, the mature reader has a wider visual span, makes fewer and shorter fixation pauses, fewer regressions, and has a wider eye-voice span. Since growth in these elements is greatest in the first four grades, extreme care must be taken to achieve the highest efficiency possible during these years. Simple tests can be made by any teacher to know how each child is progressing in these matters. Growth in these elements must not be taken for granted, but deliberate effort must be made through instruction and drill to bring the reader up to the desirable maturity level. Since these elements largely concern the speed of reading, any neglect of them will produce slow readers.

Speed is not the only desirable characteristic of the reader; there must be comprehension of the material read. As a rule, however, the fast reader comprehends best. Printed words have no inherent meanings; the child learns to attach the meanings by reference to his stock of ideas or apperceptive background. In the early stages of reading, care must be taken to avoid word consciousness. Constant emphasis must be placed upon the general thought content of sentence and paragraph. Although the word is the smallest perceptual unit, it must not be considered a thought unit.

Words have meaning in accordance with the context, or the connection in which they are used. Therefore, regardless of whether the teacher begins with words or paragraph meanings, he must soon recognize the need of both if reading is to be effective.

Another matter of great importance is word recognition. After the pupil has first acquired a stock of "sight words" he must gradually be taught to analyze words. Attention will be directed to the parts of the word or the syllables. These at first will not be sounded separately, but merely an analytical recognition of the parts will suffice, especially of words with common elements. In the second and third grades emphasis can be placed upon the sounds of the parts or syllables separately. Pronunciation will proceed from consonants to vowels, or from closed to open, as ex-cla-ma-tion, not ex-clam-a-tion.

As to the use of phonics, there is difference of opinion. It is not a question of whether to use phonics, but when. A few bright pupils will easily see the similarity between the new and the familiar words, such as found and ground, or mill and hill. These will require very little special help in learning to attack new words. They will have a good visual and auditory memory of words and syllables. Other pupils, most of them probably, will see the relationships and similarities if the teacher gives a moderate amount of instruction in phonics. Extensive drill will be found unnecessary even with this group. A third group will need much help in making the analysis of words and sounds to enable them to attack new words. How phonics shall be taught, or how many phonograms shall be used are relatively unimportant. Various systems are used, but all agree that a good reader

must have so mastered the use of vowels and syllables as to be able to make an intelligent attack upon new and unfamiliar words.

During the first three grades the attention is directed towards the mastery of the mechanics of reading, both oral and silent. Beginning with oral reading chiefly, the emphasis gradually shifts to silent reading, especially at the beginning of the fourth grade. Oral reading is valuable in forming habits of distinct articulation, of correct pronunciation, and in the proper use of the voice. Silent reading has the advantage of being much more rapid. From the standpoint of eye-movements it is evident that in silent reading the fixation pauses are fewer and of shorter duration. The purposes are of course different in oral and in silent reading. In oral reading the reader must not only secure the thought himself but read so that others may understand.

Learning TO read for information. With the beginning of the fourth grade new subjects appear in the curriculum which require reading for thought. Having secured a reasonable mastery of the mechanics of reading, the attention now begins to shift from processes to content. In order profitably to read history or geography one must not be encumbered with ordinary mechanical difficulties. In view of the extensive reading now expected of the pupil, it is essential that he attain a high efficiency in silent reading.

In the fourth and fifth grades, one's reading habits begin to be fixed. Habits of reading will differ according to the purpose of the reading and the character of the material read. Some types of material require merely to be read hastily or scanned; other material must be read with precision and deliberation. Reading a legal document such as a contract or

a statute law requires something more than the reading of a newspaper. The novel calls for a different type of reading from that needed in history, science, or philosophy. Instructors in reading must not neglect a due consideration of the difficulties involved in reading such technical literature. The learner who is accustomed to none but the story type of reading will experience increasing difficulty in the upper grades, in high school, and in college. Ample opportunity must be afforded for practice in interpreting and reproducing in one's own thought the contents of the printed page. The learner must be encouraged to think with the writer, and not merely read in a passive attitude. The reader is referred to the next chapter for illustrations of how reading for information is employed in the upper grades.

Learning WHAT to read. In the fifth and sixth grades attention should be directed towards the refinement of the reading processes and the development of good taste in reading. Many opportunities will be afforded in the content subjects to improve and refine the reading habits of the pupils. At the same time pupils must learn to evaluate reading material and develop an appreciation of the finest. It is a great asset to be able to discern what is good, what is relevant, and what is significant in a reading selection. Some of the printed materials of today are not worth reading; some merit only a brief scanning; some deserve serious consideration; and some need to be read, reread, and pondered.

Diagnosis of reading difficulties. When special difficulties or failures in reading arise, a thorough diagnosis should be made of each case. It is unfair to the learner to assume that the cause is feeble-mindedness or lack of capacity. To make a complete diagnosis, certain steps must be taken, perhaps

the first being an examination of the eyes. If a refined instrument such as a telebinocular apparatus cannot be afforded, at least tests can be made to detect any gross defects of vision. The strength and effectiveness of each eye can be tested separately, and then binocular vision can be examined for clearness, focal distance, and perception of depth or third dimension. If no physical defects are present, a standardized reading test may be used. Such a test usually measures such elements as word meaning, paragraph meaning, ability to follow directions, vocabulary, and speed of comprehension. The resulting score shows the general standing of the child with reference to the average for his age or grade.

Often the cause of failure in reading is found by a case-study of the child through information obtained from parents, school records, and former teachers. Illness or long absence from school is a possibility. Sometimes the cause is emotional, such as unpleasant experiences with parents or teachers. Such investigations often reveal hidden, deep-seated causes of poor performance in the school room.

As a last resort, intelligence tests may be given to determine the child's capacity to learn. If the rating is low, the only resort is to adapt the program to the child's level and needs. Children with inferior mentality cannot profitably study such subjects as history and geography. One must be careful, however, to discern whether low mentality caused the failure in reading, or whether inability to read caused the low score on intelligence. It may be necessary to employ a nonlanguage test to avoid this difficulty.

Close scrutiny of ineffective oral reading often reveals a poor auditory memory. This does not mean that the child is partially deaf. He may hear well but he cannot remember

the sounds of words. Failure may also be due to speech defects or a lack of proper training in phonics. Not infrequently other causes are found, such as improper eye-movements, lack of interest, or timidity. Standardized oral reading tests can be administered effectively by any teacher after some study and practice. These tests yield a comparative score on such items as omission of syllables and words, insertion of words and syllables, wrong pronunciation, repetition, substitution of words, and disregard for marks of pronunciation. Errors with respect to these items may of course result from any of the causes previously mentioned.

Achievement manifested in action. If the fundamental arts, skills, habits, and attitudes in reading have been actually attained, it seems that they should continue to function in life situations. The work type of reading as taught in school should be of continual service in one's vocation or profession. Such reading is not only an instrument of thought, but it supplies needed information and provides a means of communication.

The recreational type provides a means of wholesome enjoyment of leisure hours. For most people the greatest part of the reading will be outside their particular trade or profession. They will be eager to know about people, events, and the things of nature. If the true reading adaptations have been made in school, the learner will manifest a permanency of interest in reading and continue to develop the ability to evaluate that which is read. As pointed out in several different connections, each learning is an accretion to personality. Thus reading ability is a part of one's personality organization and constitutes a phase of one's mental life.

GENERAL STATEMENT

In concluding the treatment of the practice type of learning and teaching, a few generalizations may be emphasized by way of summary. In the first place it is evident that certain learnings have enough in common to be treated as a type of learning. The common element in this connection is practice, resulting in such outcomes as habits, skills, and arbitrary associations. A knowledge of the processes involved is essential to effective teaching of the subjects belonging to any of the types.

A second generalization is that mere repetition or exercise, even in the practice type of learning, fails to produce or result in learning. On the contrary, when learning is really taking place, the learner faces a new situation at each attempt made. Any kind of brain-path theory or bond hypothesis is inadequate as an explanation of learning, even on the level of the skills.

A third general proposition is that in acquiring learnings of the skill or practice type the procedure is from crude, significant wholes towards a gradual differentiation of the parts through practice. This principle involves a direct attack upon the goal or objective and not an attempt to master the elements separately and coordinate them into the whole. This fact is abundantly illustrated in beginning reading, in building up perceptions, and in the mastery of sensori-motor skills.

A fourth generalization is that the higher mental processes can be profitably employed in this type of learning. Evidence is accumulating to the effect that even in spelling certain generalizations are helpful and promote transfer of

learning. Most spelling rules have too many exceptions to warrant generalizations, but where these are possible they should be encouraged. In arithmetic much unnecessary drill can be avoided by rational insight into the nature of the number system and by an understanding of the relationship of the fundamental operations to this system.

A fifth fundamental truth is that learning is generally facilitated by keeping the learner informed as to his progress in learning. In most cases the learner can do this testing for himself by the use of standardized measuring devices. This principle suggests the importance of the learner's attitude towards his work as a factor in learning. In view of all the various factors involved in effective learning, the teacher must assume the responsibility to avoid waste and make learning efficient and economical.

Finally, let it be emphasized that true learning adaptations acquired through practice are functional. They are not stored knowledge or information, but changes in the learner's personality organization. These acquisitions are not tools in the narrow, mechanical usage of this term; they are new abilities and functions of an integrated organism.

EXERCISES

1. In the light of this chapter evaluate the statement that practice makes perfect.
2. Make a list of learnings belonging to the practice type which are not discussed in this chapter.
3. Explain and evaluate the "S-R bond" hypothesis as it relates to the skills.
4. Explain how a person learns to swim or skate.
5. Evaluate the statement that all learning is merely conditioning.

6. Draw up a set of instructions to guide pupils in studying a list of spelling words.

7. Draw a large star or other irregular figure and attempt to trace the lines by observing your pen in a mirror. Do you improve after several attempts? What light does this exercise throw upon the nature of handwriting?

8. Attempt a problem in addition and multiplication by use of the Roman numerals. What are the advantages of the Hindu-Arabic system of numbers?

9. By means of a mirror held to the side of a child's eye, observe the eye-movements and fixations during the oral and silent reading of a selection. How do the movements vary for the two types of reading?

10. Test your friend or roommate to see which kind of material can be read the farthest, letters separately, words, short words, or long words. Explain.

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CHAPTER VII

THE RATIONAL TYPE OF LEARNING

THE second type of learning and teaching includes those activities which may appropriately be termed reasoning or rational learning. It will be observed that this type is in sharp contrast with the practice type described in the last chapter. The discussion in this chapter will be concerned with the following major questions. (1) What are the fundamental learning processes in this type? (2) What learning products or inner changes in the learner are expected? (3) What study techniques are appropriate? (4) What general principles govern teaching procedures in this type? (5) What principles apply to specific subjects belonging to this type?

THE PROCESSES OF LEARNING

Identification of the type. Attention is directed again to the important fact that the key to an understanding of correct teaching procedures is found in the principles of learning. In order, therefore, to teach properly the subjects belonging to the rational type one must examine the learning processes involved. Moreover, the manner of learning, or the characteristic learning procedure, furnishes the clue in identifying the rational type of learning.

Try to contrast rational learning with that of the practice

or skill type. It is obvious that reasoning is a different process from repeated attempts to imitate a model or to acquire a neuro-muscular coordination. The element of practice, which is common to all learnings of the skill type, is conspicuously absent from the rational type of learning. The latter is characterized by such operations as rational analysis, critical observation of relationships, and logical organization. It seems perfectly clear, therefore, that such subjects as history, economics, grammar, geography, civics, and physics belong to an entirely different category from those subjects which require chiefly the lower mental operations and involve the element of practice. With this distinction in mind let us examine more in detail the manner of learning.

How rational learning proceeds. Much confusion has resulted from attempts to explain reasoning by outlining the "steps" or "stages" supposedly involved in the process. A previous discussion will be recalled in which it was stated that all learning proceeds from vague, unorganized wholes to a differentiation of parts. Applied to rational learning this means that a problem situation must be viewed in its entirety; it cannot be solved piecemeal. All the phases or aspects of the problem must in some way hang together in the mind of the learner. The moment this wholeness of grasp is lost, the learner becomes confused.

It has been said truly that one must keep the problem in mind. This is another way of saying that details are grasped in relationship to the whole, from which learning proceeds. A clear apprehension of the problem is half the battle, because at least a crude pattern for a solution has been drawn. Subsequently the pattern clears up, true relationships are discovered, and the solution results. Let us now examine in

detailed analysis some of the mental processes employed. Let it be understood that these do not occur in order as discussed. They are used as the particular situation demands.

The first of these is what we shall call *perceptual span*. By this is meant the ability to grasp and hold in mind a great number of items or factors of a situation, or to become aware of the various elements in a complex problem situation at one time. Memory is also involved because the problem usually requires the recall of facts or truths previously acquired. This intellectual grasp is noticeably lacking in many pupils who experience constant difficulty in solving problems. When they think of one element of the situation they lose sight of the other phases. As a consequence they never even begin to solve the problem; in fact they never know what the problem is. It should be stated in this connection that all learners, even the most capable, are aided by the writing of items which they wish to examine as a related group. Imagine how the mathematician would be handicapped without any written symbols!

Another activity is *attention* and *observation* of details. It is well known that a person of insight is one who gives quick attention and accurate observation of the significant details in a situation. Holding in mind the essential features of the problem, the learner scans the facts and materials available for possible clues or essential relationships. In some types of problems this observation will be direct; in others it will be indirect through reading. Two facts may mean nothing in isolation, but prove to be an important clue when viewed together in the light of the whole problem.

In this connection *imagination* should be mentioned. In a purely perceptual situation, involving chiefly the sense

mechanisms, we manipulate objects, but in ideational or conceptual situations we manipulate ideas. Imagination is thus a form of mental manipulation. As a purely mental process we piece together or compare objects and ideas, exchange places with objects, or substitute one thing for another in our search for important clues to a solution. The significant thing about this procedure is that the materials we thus manipulate may be miles and years away from our senses. *Visualization* is a form of imagination in which a relationship or a pattern is constructed as a mental picture for the purpose of study. These types of imagination or mental manipulation are in evidence in trying to answer the following question: If a 3-inch cube is painted red on all sides, then sawed into twenty-seven 1-inch cubes, how many cubes will be red on all sides, how many will be red on no side, on one side, on two sides, on three sides, on four sides?

Discrimination or differentiation occupies an important role in rational learning. If in arithmetic the learner confuses "sum" and "product," "vertical" and "horizontal," "square yards" and "yards square," "pint" and "pound," and so on, there is certain to be much trouble in solving problems. Another common error is failure to discriminate between what is known or given in a problem and what is unknown. A low reading ability may be the immediate cause of this difficulty. In problems requiring classification or grouping of data it is most essential to be able to discriminate accurately. Unless this is carefully done, the learner may be found trying to add pounds, gallons, and dollars. So important is this process of discrimination that many intelligence tests call for some form of it as a measure of higher mental ability.

There must also be rational *analysis* of the problem situation. This word is another way of designating the various processes previously described. As the analysis proceeds, the detailed parts of the problem situation are differentiated and classified. Paradoxical as it may seem, one always organizes or synthesizes while making an analysis, because the parts cannot be conceived apart from the whole. The entire pattern is constantly held in mind in making the analysis. Any one, even a child, can take a clock apart, but not just any one can make an analysis of the mechanisms as a functioning unity.

The point of view presented in this discussion is well illustrated in the *hypothesis*. In scanning a problem situation as a whole the learner may, especially in the inductive form of reasoning, formulate a tentative explanation of the phenomena observed. This is the hypothesis or temporary generalization. Significantly enough, this is also called a "working hypothesis," indicating the necessity of working from some general pattern or concept. With this in mind the details are further examined and additional facts secured to support or refute the hypothesis. If all the details seem clear in the light of the tentative explanation, then it becomes accepted as a *generalization*. This type of rational procedure is a common practice in the natural sciences.

Drawing *inferences* is an important phase of rational learning. Inferring is not a process of detaching a thought from a situation or event. It is more properly the perception of relationships in a total pattern. It is quite prominently employed in attempts to solve crimes, in which fragments of evidence must be pieced together to complete the picture. In popular speech it is "putting two and two together." In

- trying to understand historical events one must resort to some means of supplying the facts which never found their way into a record. In the final analysis, drawing an inference is, therefore, merely recognizing a logical relationship between sets of facts in a problem situation.

Finally, there must result an *organization* of one's thoughts regarding a problem situation. The known elements must hang together. The integrating factor is the operation of principles or laws. Events and phenomena do not usually occur in a vacuum. They take place in a "field of action," or environment. Each effect has its cause. Organization implies, therefore, *integration* or a functioning unity. The physician, for example, observes in his patient many types of symptoms, often apparently unrelated. His diagnosis, however, is not complete until all of these elements are integrated around some principle of medical science. Then they point to the same thing; they take on meaning; the problem of diagnosis is solved.

THE LEARNING PRODUCTS

The inner changes or educational objectives expected from this type of learning are easily inferred from the previous analysis of the learning processes. The learning products may be variously classified, but for purposes of brief analysis let us examine four typical learning outcomes, namely, reasoned conviction, understanding, rational attitude, and knowledge. These are not at all independent of one another but closely related.

Reasoned conviction. The problems which confront human beings are not all of the same kind. Some can be solved to the satisfaction of all concerned, because the solu-

tions can be objectively verified. Other problems, however, particularly in the realm of values as exemplified in philosophy, the social sciences, and religion, are not susceptible to such proofs. In these cases the inner changes in the learner may be mere beliefs, opinions, or reasoned convictions. These usually exist in the form of inferences, "intuitions," and generalizations which are accepted as true by the one who holds them. Some beliefs are, of course, accepted authoritatively without recourse to reasoning, but not all are thus acquired.

The results of inductive technique in science furnish a good illustration. The scientist observes related phenomena in a wide variety of specific cases and attempts to discover some uniform mode of behavior. In this way he begins to formulate a tentative explanation or belief about the facts at hand. As evidence accumulates he eventually becomes convinced that his generalization is correct. Most generalizations of this kind remain mere convictions or beliefs because of their very nature. Darwin became convinced that existing species have evolved from a lower order of life. Such a generalization is an expression of a reasoned conviction or belief. Not all people accept this generalization, even though they may admit the facts from which he drew the generalization.

Debates on economic theory or governmental policy also illustrate reasoned convictions. By reasoning, a person may become convinced that a certain procedure or policy is better than another. Economists in one era will subscribe to one theory of business cycles and in another era turn to another explanation. Legislators, by studying the affairs of state, become convinced that certain statutes should be passed. The

next legislature by similar study arrives at a different outcome. In all cases such as those enumerated there is a lack of complete understanding due to ignorance of basic principles. Let it be emphasized, however, that this type of outcome is altogether essential to the promotion of human progress. The important thing is to understand the exact nature of the products of our attempts to reason.

Understanding. A more desirable outcome than belief or reasoned conviction is complete understanding. When this stage is reached the learner knows why certain phenomena appear and what principles are operating. For example, before the barometer was invented it was observed that a suction pump could lift a column of water only a certain height (about 32 feet). But this phenomenon seems not to have been understood until Torricelli, an Italian physicist, pointed out the principle of atmospheric pressure whereby air pressure raises a column of water to a definite height as determined by the weight of the water.

In arithmetical and mathematical problems the learner may do a great deal of thinking or reasoning, but at any given moment he either understands or does not understand the solution. A mere memorization of a proof in geometry is not the same as an understanding of the proof. There must come a time when the principles and relationships are grasped and all becomes clear to him. He can then proceed to explain the problem to another person. By applying the laws of operation in mathematics one can arrive at new knowledge, such as the distance between inaccessible objects. One either does or does not understand these laws of operation. It is not a matter of practice or the amount of effort put forth. A physician understands the patient's difficulty

if he can relate the case to well known principles of medical science. If the case is not understood, the treatment becomes a matter of experiment.

Rational attitude. The most important and permanent change or outcome in this type of learning amounts to an accretion to personality; the learner has become rationally minded, or assumed a rational attitude. In each problem situation in life such a person observes carefully, seeks for basic facts and principles, and governs his behavior accordingly. He is thus shielded against certain common mistakes, dangerous situations, and insidious propaganda. His behavior is not only intelligent, it is rational.

One of the chief differences between primitive man and a civilized man is found in their attitudes toward the phenomena of nature. Primitive man seeks an adjustment in appropriate beliefs, customs, and emotional responses. Civilized man seeks a rational basis of action. His behavior is different because he has become a different person by rational learning.

A rational attitude may be detected even in small children. Theirs is not essentially different in kind from that of adults; it is directed towards simpler matters common to the child's experiences. As early as age four the child asks for an explanation of a vast number of things. This behavior may be described as curiosity, but if encouraged by the school program the child will soon cease to be satisfied with just any answer; he will want to know for himself.

Knowledge. Of course the rational processes result in knowledge of facts and truths. This learning product has been so emphasized in teaching as to require little discussion here. A few illustrations will be sufficient. We know the

distance from the earth to the moon not by direct perceptual experience, but indirectly through reasoning, or mathematical calculations. By the same type of procedure we know the diameter of the earth, the time of an eclipse, or the height of Mount Everest. Likewise by the use of measuring instruments and the number system we can determine the weight of objects, the capacity of containers, or the speed of moving objects.

The illustrations above are examples of knowledge which is exact or practically certain. By other rational processes, knowledge is obtained which is less capable of objective and final proof but nevertheless useful as a basis of operation. Such knowledge takes the form of generalizations, which may include definitions, theories, principles, and laws. Knowledge of facts in history may be obtained directly from, or by drawing inferences from, records of the past, either written or unwritten, such as relics or "remains." The reader will readily think of countless other types of knowledge which may result from the rational processes previously described.

GENERAL TEACHING PROCEDURE

The teaching procedures must conform to the principles of learning. The rational type of learning demands a technique quite different from that of the practice type. A detailed description of an appropriate technique cannot be undertaken here, but certain major aspects will be considered in order to make the principles clear. In the following paragraphs an attempt will be made to identify the most important principles governing correct teaching procedure.

Determining course units. Assuming that the objectives

are clearly determined, what shall govern the teacher's procedure in accomplishing them? Our first principle is that effective teaching of rational subjects requires the identification of significant, meaningful wholes as units of instruction. Rational learning occurs most typically in mathematics and the sciences from which our illustrations will be taken. Each science consists of significant aspects which can and must be learned if the science is to be understood. A course is designed to accomplish a certain number of these learnings or aspects by the acquisition of one unit at a time. A teacher must, therefore, be sufficiently acquainted with the subject matter to mark out and identify the essential learning units.

It must be emphasized here that a unit is not a body of subject matter, as some writers declare. The amount of reading matter has nothing to do with a unit. Some units will require much, some very little subject matter. The essential feature of a unit is that it is something which can be learned and which results in a significant change in the learner. The memory can be filled with subject matter content without resulting in any rational learning. In that case the memorized content is soon forgotten and the learner is none the better from the experience. For example, the topic "Industries in Detroit" is not a unit, because a person could learn something about this subject for a lifetime and never feel that he had finished. But the questions, "Why Detroit has become a large city," or "How Detroit gets its water supply" may be used as elementary units because they are definite and significant. Each course or subject should be outlined in appropriate units, the number depending upon the nature of the course and the maturity of the learners.

The problem situation. Rational learning begins with a

problem. The proper introduction or presentation of a unit constitutes a problem situation. The statement of the unit and its practical implications should be challenging, in that it should suggest something worth while to be learned. Memorizing and reciting facts from books cannot be challenging, because there is nothing to learn. Moreover, as previously explained, rational learning does not proceed by accumulating bits of knowledge, but rather by a direct attack upon significant wholes through a differentiation of essential parts or details. The unit affords an appropriate device for calling forth the proper learning activity.

Guidance in orientation. Special emphasis should be placed upon the principle that expert teacher-guidance is essential to efficient and economical learning. This principle opposes the assumption that pupils should initiate all of the learning activities leaving the teacher in the background. Such guidance is needed first in orientation.

The confusion of learners in beginning any new subject in the rational or science type is well known to the experienced teacher. They need expert guidance in opening the field of study and in establishing perspective. This will be necessary for the course as a whole as well as for each separate unit. Unless this orientation occurs, the learner will scarcely do more than acquire a few facts here and there without arriving at the desirable understandings.

Guidance in selecting study materials. The units must be sufficiently comprehensive to call for reading, study, investigation, or experimentation. In outlining the guide sheets *

* Guide sheets are printed or mimeographed booklets prepared by the teacher for pupils of the upper grades and high school. They contain a statement of the unit, a brief paragraph to guide the learner, some major problems or ques-

which should be placed in the hands of the learners, the teacher will indicate the best available materials to be consulted in attempting to master the unit. Note that it is not a mastery of the materials, but of the unit. Textbooks are, therefore, merely instrumental; they are not ends. The materials, whether reading materials or laboratory materials and equipment, should be sufficient in character and quantity to suit the needs of each learner, because some will need much more than others to master the same unit.

Guidance in study. In dealing with each unit there will be a period of study, either supervised or independent. It might prove necessary to divide the group into two sections on the basis of the amount of assistance required. This season of study may last for several days during which the learner engages in a variety of activities. Efficiency in study requires the masterful use of the tools and techniques of study. The important intellectual tools have been discussed in another chapter but may be briefly reviewed here for emphasis. In the first place the student must acquire efficiency in *reading* the literature in the particular field of study. Some can read fiction and drama well but find themselves handicapped in trying to read technical literature. Guidance is most essential in fields which are new to the learner.

Another tool is *writing*. This may assume the form of note-taking which is essential in some types of studies. Mere recording is not so valuable, except in experimental work, but there is profit in recording one's own reaction to material

tions which are essential elements of the unit, reading references, illustrative problems and other things to do, and voluntary exercises and projects for the faster pupils. One textbook or many different books can be used for references.

read, observations made, or lectures attended. Writing is also a great aid in holding before one a mass of facts or details for purposes of organizing a line of thought. Special forms of writing include statistical tables and graphs, which are useful in clarifying thought in certain studies. But the right use of these cannot be taken for granted; they must be taught.

Other intellectual tools are *language*, *logic*, and *mathematical concepts*, all of which are closely related. Mathematics is essentially a system of pure logic. A formula is a convenient device for aiding complex, rational procedures in that field. Mathematics is also the logic or the language of science. These tools make for precision in study not only in their own fields but in practically all other fields. Language, which in a way includes numbers and logic, is of course *par excellence* the master tool of every learner. It is the chief means of organizing a person's thought.

In teaching how to study, the proper use of libraries and laboratories must be understood. A surprisingly large number of learners do not know the difference between studying and merely learning what the textbook says. It must be impressed upon students that they do not actually learn books or lessons but rather learn *from* these. Books are aids or devices to help one master the units of the course. There is no virtue in spending long hours reading a book with no objective in view. Likewise a laboratory may be abused. Without proper guidance students usually stagger through the laboratory period trying to follow sentence by sentence what the laboratory manual says to do. There is no purpose, no problem in mind. Chemicals or other materials are wasted, and little there is to show for the effort. Evidence

is abundant to the effect that good lecture-demonstrations are superior to much of the individual work. The reasons are obvious; there is expert guidance, and the problems are grasped in clear perspective.

Guidance in organization. After the necessary references have been read, the experiments performed, and the details of study completed, it is well for the group to assemble for the purpose of organization of their ideas and experiences regarding the unit. In this exercise, which should require only one daily period as a rule, it should become apparent to all that a unity exists in the various experiences which they have had. The organization will assume the written form of a brief wherein the major elements or arguments are related to the unit title. Whereas the guide sheets may have presented problems in question form, the elements in the organization will be in the form of statements which include answers to these questions. See an illustration of such a unit under the topic "Principles in Social Science" later in this chapter.

When the period of organization is announced, the pupils will review their materials and ponder the learnings which they have acquired. Then they come together to organize their experiences as a group. All books, materials, and notebooks are laid aside. The teacher will take the crayon in hand and write on the blackboard the statements which the pupils offer as the essential arguments of the unit. Thus the brief is formed as a group activity. In the fourth and fifth grades considerable help will be needed by the teacher, but in time the learners will form habits of bringing together easily their ideas into a systematic, unified sequence of thought. Then each experience, each separate learning will

have meaning when viewed in the light of the whole problem.

Guidance in oral and written expression. Learning is effectively registered by oral and written expression. Good teaching technique provides opportunity in each unit for the learners to express their ideas. Each member of the group should be expected to contribute to the group discussion which should be held after the reading, studying, or experimenting has been done. Some will be asked to deliver more elaborate talks before the group. Others will take their turn in the next unit, so that all may have this advantage. Ability to write the gist of the unit in one's own words in a forceful, trenchant style is an aim greatly to be desired. The first efforts to do this type of activity may not appear very promising, but repeated efforts will bring astonishing improvement.

The proof of learning. Before leaving each unit, the teacher should have evidence that the desired changes have occurred in each learner. If there are non-learners who are special problem cases, these will receive exceptional treatment apart from the remainder of the group. Ordinary tests which yield comparative scores are hardly adequate to give evidence of learning. For a more complete discussion of appraisal of learning, the reader is referred to a later chapter, but here it should be pointed out that a comparative rating of each pupil is not wanted. The important issue is whether each has mastered the unit. Simple objective questions will aid if they are so constructed as to raise critical issues of the unit and of the course as a whole. The floor talks mentioned in the preceding paragraph furnish important evidence as to the learner's achievements. His written work done in the

presence of the teacher furnishes significant evidence. If a pupil can stand before a group and talk informally and intelligently about a unit, there is little need of further evidence. At any rate, the teacher is looking for proof of learning in each pupil, because all must come to the point of actual learning before the unit is finished.

Summary of general procedure. The section of this chapter just concluded may be summarized in a few brief statements. (1) Correct teaching procedure requires that each course or subject be organized into suitable learning units. (2) The teacher will provide printed or mimeographed work sheets indicating significant problems or aspects of each unit and pointing to the best materials available for solution of the problems. (3) The teacher will act as expert guide in presenting each unit so as to provide motivation and orientation. (4) The teacher will continue to guide in the study of the materials or subject matter, checking individually the progress of each learner in the proper use of the appropriate study techniques until the essential understandings have emerged. (5) Provision will be made for the learners to meet as a group and organize their ideas and experiences regarding the unit. (6) Then there should be extensive and intensive discussion and informal floor talks on each unit as significant aspects of the course being studied. Also the writing of a short paper on each unit is an effective way of intensifying the learning experiences and improving one's ability to clarify and organize thought. (7) By suitable tests on crucial matters of each unit and by following each pupil's learning, the teacher will seek evidence of mastery on the part of each learner—not his standing with reference to others, but with reference to the desired outcomes of the unit.

PRINCIPLES APPLIED TO ARITHMETICAL REASONING

The preceding analysis has dealt with general principles in the rational type of learning. Attention will now be directed toward specific principles in limited subject matter fields. No attempt will be made to outline a technique and materials necessary in teaching, but simply to indicate certain fundamentals.

Examples and problems. For convenience and clarity in the use of terms, we may consider as "examples" those arithmetical situations in which the processes to be performed are indicated to the learner. These are usually set down in a form ready for addition, division, or subtraction, as the case may be. The pupil's task is simply to learn the processes, the reasons for the procedures, and gain facility in doing the operations. Such learnings have been previously discussed in the chapter on the practice type of learning and designated arithmetical operations. We are now to consider those arithmetical situations in which the processes are not indicated but must be discovered by the learner through reading, observation, or oral communication. These we call problems, and the processes involved are called reasoning.

Qualities of a good problem. Before the widespread application of scientific method to curriculum problems early in the twentieth century the problems in textbooks in arithmetic generally had little connection with any situations which a child would probably meet in life. They were "brain-twisters" and dealt with hypothetical situations not only impractical but often ridiculous. Doubtless the doctrine of formal discipline had something to do with the selection of such problems, the assumption being that the mind is disciplined by such mental gymnastics.

The characteristics of a good problem are now so generally recognized that a striking uniformity appears in textbooks in arithmetic. *A suitable problem deals with real life situations.* It may perchance be the calculation of the cost of a grocery list, the construction of a base ball diamond, or finding the amount of floor covering needed. In the second place *the language of the problem must be clear, adequate, and adapted to the level of the learner's vocabulary.* Confusion results if the problem is presented in a vague, verbose style. The learner must not be required to do an additional task of trying to decipher the meaning of the language employed. A third requirement of a problem is that *it must be appropriate to the learner's capacity or ability to solve.* Modern arithmetics are usually very accurate in this matter of grade placement, but the teacher should be very cautious in selecting original problems. The fourth quality is that a problem should as far as possible be *interesting.* Life problems properly presented will usually be interesting, but a deliberate effort must be made to make them so. The last requirement to be mentioned is that a problem should be *related to the process or principle under consideration.* For example, problems in percentage would not be appropriate as exercises in connection with a study of common fractions.

Requirements for problem-solving. It is well known that problem-solving ability is rather closely correlated with *native mentality* as measured by intelligence tests. Pupils whose intelligence quotients are under 90 cannot do much with problems involving abstract or rational learning. Other causes, however, must be considered before assuming that failure is due to low mentality. *Skill in the fundamental operations* is a requisite to good work in problem-solving.

Such number facility includes of course some intelligent understanding of the basic features of the number system.

A matter of prime importance is a *technical vocabulary*. This means that the learner must have accurate perception of symbols and terms or phrases, such as the signs of operation, business terms, words used in various measurements, and so on. In brief, the learner must acquire the language of arithmetic. Another essential closely related to this one is *ability in silent reading*. All investigations agree that reading ability is a prominent factor in the solution of written problems. Unless the learner can read he cannot know what is given in the problem or what is wanted. A more accurate, deliberate type of reading is required than that employed in reading fiction. Inability to read is often mistaken for low mentality by those who are not careful to diagnose learning difficulties. Another factor often overlooked is *attention span*. One who has a narrow span tends to forget what the problem is. It is difficult for this one to grasp the various phases of the situation at once and hold them in mind. While studying one part, another part is forgotten, and true relationships are not discovered.

Pupil procedure. Although no rigid, invariable procedure can be prescribed in solving a problem in arithmetic, yet suggestions may be helpful. A careful reading of the problem should furnish a general impression of its nature. It must be examined sufficiently in detail to discover just what the problem is. A close discrimination must be made between the known facts (or numbers) and the unknown. A study of the known facts in relationship to one another is an essential step in the organization of the attack upon the problem. It is helpful to inspect the facts and make an

estimate of the probable result or approximate answer. Items must be carefully classified so as to avoid trying to add, for example, dollars and acres. Many errors are made in carelessly copying the numbers while reducing the solution to written form. Finally a check should be made to prove the solution. The learner should always observe whether the answer is reasonable. For example, consider this problem: If A can do a piece of work in 3 days and B in 4 days, working alone, how long will it take both to do the work if they work together? Manifestly, an answer as large as 3 is not reasonable. Success depends upon the ability to keep one's thought organized by grasping and holding in mind the whole problem situation.

Teacher procedure. The teacher's first task is to determine what processes, skills, knowledge, and understandings are to be acquired. These are to be organized into instructional units such as the process of measuring distance, area, volume, weight, or time. After the fundamentals are taught, problems are given to afford experience in the actual use or application of the principles and processes acquired.

A fundamental principle of procedure is that *instruction should develop ideas and meanings before the symbols* which stand for the ideas. This fundamental truth was set forth by Warren Colburn in his revolutionary arithmetics of 1821. The principle is none too well observed, however, by some teachers of today. Symbols are abstractions and lead to confusion if presented to children deductively. For example, children must talk freely and understandingly about such words as "four," "five," "divide," "multiply," "dollars," "cents," and so on, before dealing with the symbols which stand for these words.

A second principle is that good teaching requires *close attention to the processes employed by the pupil*. One pupil attempted to divide (by short division) 78 by 3 and obtained 23 as a result. By analysis of his procedure it was discovered that he took the first step correctly, but the "1" left from the 7 was *added* to the 8 as "one unit" and the resulting 9 divided by 3 . Not drill but instruction was needed in this case. A close analysis of the thought processes of pupils will show whether they are performing according to the suggestions made in discussing the preceding topic.

As a third principle it may be stated that *good teaching seeks to develop pupil initiative and self-appraisal*. The learner should be taught to assume an inquiring attitude by asking himself such questions as, What am I to find out? What facts are given? What shall I do with the numbers? It is well to ask pupils to make original problems after a sample has been given. This exercise puts them into an active, aggressive frame of mind. Problem situations with numbers omitted may be offered and the pupils asked to supply the numbers. It is highly profitable to have pupils explain orally how to solve reading problems without actually performing the operations. In this case, emphasis is placed upon relationships—what to do, and the reason for doing it. When errors have been made, it is desirable to lead the learner to discover his own mistakes by a new emphasis upon the fundamentals. The learner must come to the point where he knows he is right without having to seek the teacher's approval.

A fourth principle is that *a knowledge of one's progress is profitable in learning to solve problems*. It is worth while to encourage pupils by pointing out their achievements; it

gives them confidence. A taste of success is a powerful motive at all age levels. Progress charts which indicate achievement from time to time are effective in the lower grades. In fact this principle holds in all walks of life. Think how important it is for the football player to know where the ball is with reference to the goal, which "down" it is, and how many "yards to go."

It must be remembered of course that a pleasant learning situation is essential to all learning with little children. This is easily accomplished by beginning not with the book but with something quantitative which directly concerns the children. The teacher who is a slave to books will hardly succeed in any subject, much less in arithmetic.

PRINCIPLES IN ELEMENTARY SCIENCE

Limitations of the elementary school. In attempting to apply some of the principles discussed previously in connection with general procedures in the rational type of learning, it is necessary first to explain the use of the phrase "elementary science." Historically, the first invasion of science into the elementary school came in the form of nature study as an outgrowth of the general agitation for sense realism which came with the kindergarten and other similar movements in the third quarter of the nineteenth century. While this movement was entering through the lower grades, a parallel movement was bearing down from above. The latter came in the form of specialized subjects pushed down from high school and the academy into the elementary school. Some of these subjects were history, geography, civil government, algebra, physiology, and general science.

Not only has the nature study movement proved inade-

quate, but experience and scientific investigation have taught us that the formal science subjects are not suitable for the grades. The inevitable outcome is an integrated program of science below the level of the specialized fields. The elementary school child is not ready to study physiology, geography, or physics as specialized sciences. These subjects belong to the higher levels of general education and specialization. To be classed as a science, such as those just listed, a field of study must have at least the following qualifications: (1) a body of knowledge or facts; (2) a body of principles which can be demonstrated; (3) methods and techniques of study; and (4) measuring instruments and devices. It is a question of how far the elementary school can go in teaching a science. What then are the appropriate objectives at the elementary school level?

Objectives of science teaching in the elementary school. Obviously, children cannot be expected to become proficient in the laboratory or research techniques of science. Nor can they do much towards the development of generalizations. They must not be expected to differentiate the specialized sciences or to understand the techniques peculiar to each of these. It seems perfectly clear, then, that the elementary science course must provide a unified experience closely integrated around the nonspecialized activities and needs of the common school population.

Let us consider some of these objectives. The first is a *right attitude towards health and hygiene*. Health habits are essential but not adequate. Conditions change and necessitate changes in habits. It is necessary to have accurate information and a rational attitude towards the care of the body and the protection of the community. Children can

learn how diseases spread, what foods are most wholesome, and what to do to promote health and normal growth.

Another worthy objective is *the ability to meet practical problems*. This includes useful knowledge about plants and animals, the care of them, and their importance to man; ability in practical mechanics sufficient to enable one to live in a mechanized world; how man deals with the forces of nature in living and in making a living; an elementary knowledge of electrical appliances, how to operate them safely and to make simple repairs; in short, the elementary school child should know how to live to greatest advantage in his physical world.

Other objectives, perhaps less practical but none the less valuable, may be attained. Science study affords *new avenues of interest and satisfaction*. These outcomes are not only good in themselves but might be quite useful later. Not infrequently has a hobby or avocation become one's chief vocation. Perhaps the net outcome of science study should be *the cultivation of intellectual curiosity*, which is the forerunner of what we call scientific attitude. It signifies the ability and disposition to observe, weigh, and consider phenomena and to act intelligently in the environment in which a modern child finds himself.

Learning activities. Earlier in the chapter a broad outline of the learning processes was presented. Mental procedures in solving problems in arithmetic were also explained. It remains to be pointed out here certain aspects of learning more or less peculiar to science. In arithmetical problems the facts necessary for the solution are all given; the pupil is required merely to relate the facts so as to find a solution. This solution can then be verified. In scientific

problems the facts must be *observed*; furthermore, in certain types of problems involving inductive technique the facts are never observed in full. One must resort to generalizations which may or may not be true. Final demonstration in such cases is hardly possible. Many problems and principles in science are of course susceptible to objective demonstration to the satisfaction of all concerned. These form the basis or core of exact science.

Suppose for illustration that a class is working on a unit entitled, *How we get our foods*. What mental processes would be called into action? *Memory* or *recall* of past experiences may be utilized by asking each pupil to list the foods which he eats, and other foods with which he is familiar. These lists may be enlarged by a planned *observation* at the local grocery store and in the vegetable garden. The next question may be, Which of the foods in the lists are produced locally? This problem calls for *exploration*, *discrimination*, and *discovery*. Then why are some of the foods not produced locally? This question opens the way for generalizations by investigating specific cases. For example, oranges are not grown in Ohio because oranges grow only in regions where the growing season is long.

Pursuing the problem further it may be asked, Where do we get the foods not produced locally? Here the *imagination* is stimulated in trying to visualize the processes of growing or manufacturing these foods. Pictures and maps aid the imagination in attempting to understand how foods, such as pineapples and bananas, are produced and the means by which they finally reach our local stores. Still more detail can be considered by raising the question as to how a food plant actually grows. In this case *experimentation* may

be used. Even in the class room living plants can be produced from seeds in illustration of the processes of plant life. Here the pupils acquire an *understanding* of why plants grow and what the essentials of plant life are. The net outcome of such experiences is a body of useful knowledge and a measure of scientific attitude.

Teaching procedures. Certain elements of teaching procedure are clearly implied in the preceding paragraphs. It should be emphasized that each course in science, or each year of study, should be organized into learning units. These are not bodies of knowledge or materials but significant aspects of science which can be understood. The following titles are suggested as appropriate in elementary science.

How we get our foods. Why we have seasons.

How to tell direction. How plants grow.

Discovering how electrical appliances work.

How to know common trees and their uses.

Manifestly each unit will have to be organized with respect to the constituent elements which, when learned and related to the whole unit, will yield the desired outcomes. The material will of course be presented orally for the most part in the first three grades. Much of the pupil activity there will be by direct observation and by doing with the hands, such as planting seeds or stocking an aquarium. Many interesting books on science subjects are now available, however, even for the first grade.

In the upper grades regular printed work sheets may be used. These will outline the problems and suggest appropriate pupil activities such as readings and experiments. Pupils will assist in planning some of the activities. The

teacher will direct the learning and evaluate each step in the work so that each activity may give an educational account of itself. Much individual work will be done in the period of study, reading, and experimentation, which may require several days. Finally the group will organize the unit and present papers and talks before the class to crystallize their newly acquired learning outcomes. Each unit of the course will be treated in a similar manner, the maturity of the learner determining the type of units used and the time required for each unit.

PRINCIPLES IN SOCIAL SCIENCE

The nature of social science. For our purposes it may be said that social science is that science which treats of human associations and relationships, either in the present or in the past. The writer has no disposition to argue the question as to whether there is a "social science." Some people say there are social sciences; others use the phrase "social studies." Just as physical science includes such sciences as physics, chemistry, geology, and astronomy, so also we may say that social science includes such sciences as anthropology, economics, ethics, history, sociology, and political science.

There seems to be agreement among social scientists that the social studies should be integrated in the first three grades of the elementary school. From that point on there are two schools of thought; one group advocates fusion and the other prefers separate subjects. One of the fundamental assumptions of this book is that there should be no differentiation or specialization of subjects in the elementary school. It is extremely doubtful that even a junior high school pupil can profitably study the separate social sciences as such.

The objectives of social science. As to the outcomes of the social studies, there is greater unanimity of opinion. Stated in broad outline these include: (1) orientation in contemporary society—obtaining a picture of the total situation in perspective; (2) a deeper appreciation of contemporary society obtained by examining our institutions, ideals, and practices in historical perspective; and (3) enrichment of human life by a knowledge and understanding of the best means of preserving and promoting our basic social institutions.

In the first three grades the curriculum should deal with the interests and needs of the child as a member of immediate social groups—the family, the school, and the community. The objectives are confined to useful *knowledge* about social relationships and wholesome *attitudes* towards other members of these groups. In brief, the aim is the socialization of the learners.

In the upper grades of the elementary school the pupil's experiences can be vastly extended through reading of social science materials. Pupils of this age level can live vicariously in remote communities, and to some extent in times past. Emphasis will still be upon contemporary life, and not much effort will be made to provide a sense of development in time.

By the end of the secondary school, that is, the end of general education, the three major objectives previously mentioned should be fully realized. Without doubt the subjects can be treated in specialized form in senior high school and in college. The final result should be a person socially intelligent and prepared to live in the society of today.

Learning activities. It is quite apparent that many of the learning activities described in connection with arithmetical

problems and elementary science are equally involved in social science and need not be repeated here. It should be pointed out, however, that social science is largely a normative science and requires a slightly different method of attack. Here the concern is with what is best to do, or with the question of the relative value of conditions and procedures of one kind or another. The problems are as broad as human nature itself and are often exceedingly difficult to grasp. It is perhaps for this reason that social science has not made so much progress as the physical sciences. In order to comprehend these intangible values, there must be wide *observation*, both in time and in space. Because of the complexity of society and the conflicting social groups, there is a great demand for *rational analysis* of factors and conditions in the search for guiding principles.

Viewed from the standpoint of the maturity of the learners, the order of learning activities is about as follows: acquiring knowledge concerning social matters; forming useful habits by observing approved social usages; extending experience through reading; acquiring a sense of values; developing temporal imagination, as in history; comparison and evaluation of data; organization of data in the process of forming generalizations; and analyzing events and phenomena with a view to discovering principles underlying human association. The inevitable result will be a realization that the welfare of the individual is closely related to, if not identified with, the welfare of the group as a whole.

Teaching procedures. Like all subjects of the science or rational type of learning, the social studies will be taught by presenting each comprehensive, significant aspect as a unit. Not only will each unit be a significant aspect of social

science, but the series of units must have coherence and integration with one another. Biographical stories, for example, are not units because they are disconnected and are not comprehensive.

Since the children of the elementary school are interested in action, the material must contain much simple narrative with an orderly sequence of events. Several attempts have been made to present materials to suit the interests, needs, and ability of children in the grades. For example, Bruner and Smith * have a series of three books designed for the intermediate grades. Book One contains four units bearing the following titles:

The Story of Agriculture
The Story of Fire
The Story of the Sea
The Story of Writing.

As an example of a unit requiring a little more maturity and rationalization we may use the following: "How the English Colonies became the United States of America." In order to understand this unit it is necessary to master at least three subsidiary problems or elements in the unit: (1) why the colonists quarreled with the mother country; (2) how they gained their independence; and (3) how the independent colonies set up a new government. It will be observed that the war of independence is subordinated to other matters far more significant in history. The whole problem or unit becomes clear when examined in the light of these three constituent elements. The unit is something to be learned; it is definite and significant; it is sufficiently comprehensive.

* H. B. Bruner and C. Mabel Smith, *Social Studies, Intermediate Grades*. 3 books. New York: Charles E. Merrill Co., 1936.

In preparing guide sheets or unit outlines, it should be remembered that only a limited amount of knowledge can be obtained by direct observation of social phenomena. An abundance of well-selected reading material will be necessary. Current literature in the form of newspapers, journals, and magazines will be helpful in giving vitality to the problems discussed. In teaching the units the teacher will observe the principles explained previously in this chapter as fundamental in dealing with each unit in the rational type of learning. In discussing teaching procedures, it was not intended to leave the impression that any rigid, invariable form of procedure be adopted. The only requirements of a procedure are that it be flexible, economical, efficient, and in accord with the principles of learning.

SUMMARY OF PRINCIPLES

Some of the most important principles discussed in this chapter are presented in brief form below.

1. Certain learnings require rational behavior, as distinguished from those which are characterized by practice. These are sufficiently unique to be designated the rational type of learning.

2. Effective learning in this type requires a good perceptual span, attention and observation, imagination, visualization, discrimination, rational analysis, ability to draw inferences, generalization, organization, and integration.

3. The inner changes or objectives in the rational type of learning may be summarized under four groups: (a) reasoned conviction; (b) insight and understanding; (c) rational attitude; and (d) knowledge.

4. Effective teaching of rational subjects requires the

identification of significant, meaningful wholes as units of instruction.

5. Rational learning begins with a problem situation.

6. Systematic teaching in the rational type of learning requires expert guidance by the teacher in providing pupil orientation, in selecting study materials, in study activities, in organization, and in oral and written expression.

7. A good problem in arithmetic has the following characteristics: (a) it deals with real life situations; (b) the language of the problem is clear and appropriate; (c) the problem is suited to the child's level of maturity; (d) the problem is interesting; and (e) it must be appropriate to the topic or principle under consideration.

8. Problem-solving in arithmetic requires (a) native ability corresponding to an I. Q. of at least 90; (b) skill in the fundamental operations; (c) a technical vocabulary; (d) ability in silent reading; and (e) a good attention span.

9. Efficient teaching of arithmetical problems rests upon the following principles: (a) instruction should develop ideas and meanings before symbols; (b) close attention must be given to the processes employed by the pupils; (c) good teaching seeks to develop pupil initiative and self-appraisal; and (d) a knowledge of one's progress is profitable in learning to solve problems.

10. Integrated courses in physical science and in social science are appropriate for the elementary school, since the children of this age are not sufficiently mature to profit from a study of the specialized sciences.

11. The objectives of science teaching in the elementary school are: (a) a right attitude towards health and hygiene; (b) the ability to meet practical problems; (c) new avenues

of interest and enjoyment; and (d) cultivation of intellectual curiosity.

12. The objectives in social science include: (a) orientation in contemporary society—a picture of the total situation; (b) a deeper appreciation of contemporary society obtained by examining our institutions, ideals, and practices in historical perspective; and (c) enrichment of human life by a knowledge and understanding of the best means of preserving and promoting our basic social institutions.

EXERCISES

1. Show that the study of music involves learnings which belong to three types of learning, the practice type, the rational type, and the appreciation type.

2. Explain how it is that language and grammar belong to different types of learning.

3. Select a problem in arithmetical reasoning, solve it, and make a list of the mental procedures which you employed.

4. How did Darwin arrive at his generalization that all species have evolved from a lower order of life?

5. How does a person arrive at a conviction that one political party is better than another? Are all convictions a result of reasoning?

6. Is it desirable to assume a rational attitude towards all questions?

7. Distinguish the meanings of the words *knowledge*, *generalization*, *belief*, *fact*, and *inference*.

8. Select a unit in science or social science and prepare it for use in teaching.

9. Show how the principle of self-activity operates in rational learning.

10. In your opinion what is the function of a textbook in teaching subjects of the rational type?

11. Take stock of your knowledge of social and physical science. How much of this was achieved in the elementary school?

12. Do you think a teacher in the elementary school needs an education as extensive as that required of a teacher in the high school?

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CHAPTER VIII

ACQUISITION OF A SENSE* OF VALUE: APPRECIATION

THE third type of learning relates to the acquisition of a sense of value, and is commonly referred to as appreciation. As the discussion proceeds it will become evident that the learnings belonging to this type are quite different from those previously described as habits, skills, arbitrary associations, and reasoning. For convenience of treatment, our inquiry will relate to four major problems: (1) Why have value attitudes been neglected? (2) What are the products of this kind of learning? (3) How are value attitudes acquired? and (4) What principles govern the teaching procedures?

THE NEGLECTED VALUE ATTITUDES

In this connection two pertinent questions confront us: (1) Why have the value attitudes been neglected in the schools? (2) What are the consequences of this neglect? The experienced teacher as well as the beginner may well ponder these questions and seek to find better answers than the ones offered in this book.

Why value attitudes are neglected. The fact of neglect is so obvious as to require little discussion. From the time of the earliest schools to the present generation teachers have con-

* The word "sense" is used here not to designate the immediate effect of stimulation of a sense organ, but in its popular connotation, analogous to the expression "sense of duty."

cerned themselves chiefly with the teaching of knowledge, skills, habits, and forms of reasoning. If tests of a pupil's progress were made, they were stated in terms of what he knew or could do, and never in terms of fundamental values in life. Knowledge and the skills are quite important and thoroughly justifiable, but at the same time our schools have turned out people who were incapable of discerning the true values in life. They have been hardly competent to discriminate the genuine from the counterfeit; the temporal from the permanent; or the sensuous from the spiritual.

The reasons for this neglect are not easy to find, although some contributing factors may be suggested. Religious indoctrination, which characterized the American colonial schools, was a system of instruction which told learners what to learn but gave no adequate basis for the choice of values on the part of the learner. This instruction was even carried on under compulsion by the legislatures of the Puritan commonwealths in New England, where church and state were together. Subject matter thus took precedence over the individual. Consequently subject matter became authoritative and left no room for individual choice of values, much less to teach pupils to recognize values.

The coming of the machine age and the invasion of science into the curriculum caused a shift of emphasis regarding values. Instead of emphasis upon mere book learning and indoctrination, Herbert Spencer and others in the nineteenth century raised the question of values, especially those to be derived from a study of science. Since that time the increasing prestige of science has caused some to feel that science can solve all of our problems. This lack of recognition of the limitations of science in the realm of values has encouraged

the mere acquisition of knowledge and techniques without much effort to weigh values and discover the meaning of experiences.

Consequences of neglect of values. One result of the failure of schools to place proper emphasis upon the recognition of worth is the naive, passive acceptance of anything which masquerades in the name of science. A good example is the vendor of patent medicines who has acquired the art of diagnosing every one's ailment and prescribing the perfect cure. Through newspaper advertisements and over the radio, appeals are made to those who are in no position to detect the quackery. In literature the same helplessness is observed. The minds of the youth are saturated day by day with the sensuous stories appearing in an unending series of degenerate literature sold in apparent good faith and rising frequently to the distinction of "best seller." Where there is such a lack of a basis for judging values, one becomes vulnerable and easily swept along with every fad, craze, and insidious form of propaganda. Thousands of people thus victimized every year could be saved from misfortune by proper education in the field of values.

To neglect the value attitudes is to give young people the wrong idea of life and of happiness. To magnify the purely intellectual and the mechanistic leaves the impression that only the visible, rational, tangible things are of value; that happiness resides in circumstances and in things. But a true sense of value causes one to realize that genuine happiness and the abundant life are within the reach of every individual. Happiness is not an intake process, but rather a fullness of life which ever flows outward. Life consists not in the abundance of the things which a person possesses. To live is

to possess an attitude of appreciation or recognition of the highest values and the finest things in the universe, and to share these with others.

THE LEARNING PRODUCTS

It is hardly sufficient to say that the outcome of learning in this field is the *ability* to recognize worth. It *is* an ability, but it is more than that; it is also the disposition or the habit of assuming a favorable attitude towards particular values. Here, as in the other fields of learning, the objectives are not attained until they are registered as phases of a functioning personality.

Appreciation means literally "to place a value upon." It is essentially an attitude whereby one recognizes worth in any of the phases of human culture. It should be emphasized that appreciation is not a skill or a trick of insight or understanding whereby one merely learns *how* to do something. Rather it is a response of an individual—a personality—so matured and so developed that true values become apparent whenever and wherever they are encountered. Confronting such a person with genuine values is not like "casting pearls before swine." On the contrary, such a personality is keyed to respond warmly and sympathetically to any situation involving the sublime achievements of the human race.

Since appreciation is manifested in the form of attitudes it is necessarily subjective. On the other hand, principles exist quite apart from any psychological considerations. We do not invent or develop principles; we merely discover them. The principle of gravitation existed long before man formulated any laws regarding it. Facts and truths exist just the same, whether we know them or not; our reactions do not

change them. But with appreciation the matter is different. Appreciation is *recognition* of worth. The Niagara Falls probably existed in all of their beauty and grandeur long before they excited any emotions in human beings. Famous men and great works of literature have frequently had to wait many years and even centuries before their worth was recognized. A man may be rejected and stoned by one generation and canonized by another; in other words, his worth existed but was not recognized. This idea is well expressed by Thomas Gray as follows: *

Full many a gem of purest ray serene
The dark, unfathom'd caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air.

It should be noted further that appreciation is different from a mere belief or a conviction resulting from logical analysis or reasoning. One may infer, for example, that grand opera is desirable because so many respectable people attend it and because so much time and money have been expended on it through the centuries. This illustrates a *conviction* of worth arrived at, not immediately, but mediately or indirectly by a process of reasoning. And so with the fields of art, religion, literature, or conduct. It is not enough to believe that a thing is desirable; it must be desired and its worth recognized.

A further caution should be mentioned. The mere enjoyment or liking for something is not necessarily an appreciation. This confusion arose from the teachings of an older school of psychology which held that feelings and emotions

* *Elegy Written in a Country Church-Yard.*

are discrete faculties of the mind. Many writers have assumed that there is an antagonism between emotional behavior and rational behavior so that only one of these can be experienced at a time. As a matter of fact, the most delightful feelings and the most sublime emotions are experienced by the intellectual giant while in action. What is more pleasing or exciting than to be engaged in solving a great problem for humanity? Now, if enjoyment alone were the criterion for appreciation, then no standard of values would be possible. Moreover, each person would have his own system of ethics and morals and therefore culture of any kind would be unimportant. It would even be uncharitable to disturb those who delight in jazz or the cheap, degenerate literature of the popular newsstand. They like these things, they are thrilled by them, but we cannot say much for their appreciation level. A sense of values can be acquired; true culture will bring forth the recognition of values which are obscure to the ignorant and the savage.

There need be no delusion as to when one has attained these attitudes. Nor can any rational test be applied. The proof is observed in human conduct itself. Some one has said, "Tell me what you like, and I will tell you what you are." Also "Where your treasure is, there will your heart be also." That is, what you *think* your treasure (value) is will be the object of your devotion and behavior. One who constantly revels in cheap, degenerate literature needs no formal test regarding good taste in literature. Ordinarily one's sense of values can be discovered by a few minutes of conversation in the field concerned. And we may all well remember that some self-appointed committee is always ready to make a report on our sense of value or philosophy of life.

HOW VALUE ATTITUDES ARE ACQUIRED

The objectives or learning products having been identified, the present problem is to point out the learning processes involved in acquiring the value attitudes. It is doubtless clear to the reader that the classroom experiences of the learner constitute only a portion of the activities necessary to form a background for the judging of values. The school will furnish expert guidance, but a much broader field of activity must be visualized in attempting to understand how a sense of value is acquired.

In this section five basic generalizations will be considered. (1) A person's evaluation of anything is largely determined by the range of the experiences which he has had. This is a phase of the principle of apperception. (2) The quality as well as the quantity of experiences must be considered as a learning factor. That is, the experiences must be significant and pertinent. (3) While the higher values do not change, our conceptions of them should be enlarged and enriched. (4) Social values emerge as we participate in the affairs of the group. (5) Imitation of models of worthy conduct is an essential factor in the learning process.

Apperception and appreciation. The general principle of apperception, previously explained, is quite applicable here. According to this principle, all learning is in terms of past experiences. It is not the objective stimulus which determines the reaction of the individual, but the organism itself, with all of its past experiences, learnings, prejudices, and capacities. For this reason a child's appreciation is exceedingly limited. The child's world is small, his experiences few, his interests narrow and largely natural. But there

exists a beginning of appreciation in the child, and this must be extended and deepened during the years of general education. It is apparent that one's experiential background is not all built by school life, but covers the whole of life. Perhaps the major part of the foundation has been laid by the end of the secondary school period, but one's life perspective is broadened and enriched long after one's school days are ended. It is clear, therefore, that the acquisition of value attitudes is vitally related to the processes of growth in culture toward social and intellectual maturity. It must not be inferred from the preceding statement that high intellectuality is necessary to appreciation; it may even become a hindrance if it develops out of proportion to other phases of personality.

Significant experiences. The chief means of growth in appreciation is found in the great culture foundations of the race. These are the fields of art, music, general literature, philosophy, science, and religion. Contact is made through the cultural institutions such as the school and the church. Some would speak of language as our chief cultural institution. This vast heritage may be appropriated only in part by direct experience. Through reading, however, the learner may participate vicariously in the best thinking of both the present and the past ages. The student of today is heir of the sublime classics of literature. These famous writings are not good merely because they are old, but rather they have endured because they are good. For example, students of government can profit much today by an intensive study of Plato's *Republic*. How many years will have to pass before such books as *Alice in Wonderland* and *Gulliver's Travels* will lose their charm for both old and young? That which

makes a classic such is its universal appeal in all ages. By closely associating with the best minds of the ages a person acquires a *taste* for literature and is thereby enabled to detect and shun the flood of degenerate writings which frequent the book stores and newsstands of today. Moreover, good biography may be utilized to develop worthy *ideals* of conduct in the young reader.

The pictorial and plastic arts furnish another field for enriching experiences. Here, as in literature, the aim is not to become an expert producer, but below the level of specialization one must seek to become a discriminating consumer. It is important frequently to view the famous masterpieces and endeavor to grasp the message which the master intended to portray. Knowledge of the master's ideals, the age in which he lived, and the story of his work are all useful in the recognition of the value of the art. For most learners the great masterpieces are not available. Consequently they must resort to copies, which are usually quite adequate for the purpose. Attempting to copy a work or to produce something artistic will prove valuable exercises for the learner.

For many people the disciplines of music afford one of the most fertile fields for the development of appreciation. As in literature so in music there must be a basis in experience in order to acquire a sense of value. Present-day life offers abundant opportunity to experience music of all classifications from folk song to symphony. Through music man can be stimulated to most noble effort, while on the other hand music may drag him down to the very depths. People employ music for many purposes—to incite men to war, to lift souls heavenward, and even to degrade one's thoughts to the lowest level of sensuality. Not all music has the same

cultural value. Music which is classified as popular is usually no compliment to the general public. Jazz has nothing to contribute to the making of a man. The places and occasions where such music is demanded are usually not such as will elevate the thoughts and ideals of either young people or adults.

One phase of worth-while human experience is being neglected quite generally today. It is the reading and study of the Bible. Boys and girls who study and ponder the ideals, warnings, and promises of these writings seldom reach the juvenile courts of this country. In American colonial days education was left to churches and private enterprises, under whose management the schools emphasized the religious life and devotion to the sacred Scriptures. With the rise of state, tax-supported systems of education, religious instruction was necessarily ruled out because of differences of opinion among the various groups patronizing the schools. Doubtless very much has been lost under extreme secularization. The general revolt against the pagan classics in favor of science and modern languages has spread to the Bible also. Perhaps it is not so much a revolt as it is a neglect which has resulted in an ignorance of the Sacred Writings which is simply appalling. Whatever may be one's view as to the authority of the Scriptures, it is incontestable that these writings contain the most sublime utterances of all time. Man has not yet attained to the lofty *ideals* set forth in the "sermon on the mount." (Matt. 5, 6, 7). Surely one who has no *interest* in such literature has missed a great part of the good and the true in life. The influence of the Bible upon English and American literature is profound. First-hand knowledge of the English Bible is, therefore, essential

to an appreciation of many of the finer things contained in our vernacular literature.

Experience changes a person's *attitudes*. The feeling that certain races of people are inferior or unimportant may result from sheer ignorance of the fineness of these people. If we could know them more intimately we would learn to appreciate them for their real worth. This principle holds true of individuals whom we may underrate because of our ignorance or prejudice. The same is true of rural and urban groups, or with different sections of the country. All in all, therefore, a person's ideals, tastes, attitudes, and interests are promoted and enriched by launching out into the depths of the ever-widening streams of culture and civilization.

Enrichment of concepts. A part of the process of acquiring a sense of value is manifested in changed concepts. An infant's concept of mother is little more than of one who answers its calls and ministers to its needs. But as the maturer years come and experience is registered in years the name of mother assumes a new meaning. Hidden values emerge, and new sentiments attach to the concept, thus giving it a new significance as the years go by. Social values in general develop in the same way. One's conception of right, justice, liberty, or honor may change with years, and indeed it should change with one's advance in civilization. It should be noted, however, that the eternal verities themselves are not changing, but merely one's conception of them.

Social participation. It is not easy to recognize social values unless a person can rise above the plane of selfish individualism. To identify one's interests and welfare with those of the group is to become socially conscious. Civilized man's superiority over the savage is not in his biological

structures, but rather in the cultural institutions which he has developed through social cooperation. Among these means of advancement are language, quantitative concepts, writing, and the various social ideals and virtues. Moreover, in such human cooperation new interests, ideals, attitudes, and tastes are inevitable. To participate in the affairs of the group is to live more abundantly, and the greater the breadth of one's interests the more truly does that one live.

Imitation of worthy examples. Whatever may be the efforts to raise the level of appreciation in young people by precept, nothing can take the place of demonstration. Community and national ideals have not always measured up to a high standard. Mere pretense and hypocrisy in adults are readily discernible by children; actions speak louder than words. Even if the immediate environment were ideal, it would still need to be supplemented by reading in order to imitate the examples of great men and women in history. Most people, no matter how degraded they themselves may be, are influenced for the better by examples of worthy conduct.

Perhaps no system of values is more important than those relating to conduct. Ethics is the science of conduct; in so far as conduct involves right or wrong. Correct ethical judgment is not morality, nor is it the same as right conduct. Strictly speaking, morality involves adjustment to social standards as determined by the mores of a group. One may satisfy both the demands of ethics and the mores and yet not have the right attitude towards conduct. One must freely and joyfully accept the right because it is right and reasonable. It is not enough to know what conduct is desirable; right conduct must be *desired*, and that not from social pres-

sure. What is objectively right is one thing, but the inclination to do it is quite another thing.

Morrison has attempted to identify and isolate the learning units in the development of conduct attitudes. He discusses fifteen of these and suggests that others may yet be discovered. His list follows.*

Deferred satisfaction	Sense of consequences of own acts
Altruism	Spirituality in the sex relationship
Sense of fair play	Right acceptance of criticism
Property rights	Acceptance of the value of cooperation
Fidelity to promises	Obedience to constituted authority
Sense of duty	Sustained application
Leadership	Fortitude
Punctuality	

Whether or not this line of attack upon the problem is accepted, it must be admitted that something definite and specific is needed with which to build a positive character or personality. Teachers and parents must not assume that moral standards will be achieved incidentally; there must be some teaching and much demonstration.

PRINCIPLES GOVERNING TEACHING PROCEDURES

The next question concerns the function of the teacher in the development of value attitudes. Perhaps in this realm the teacher can make his greatest contribution to the permanent happiness of the learner and the welfare of society. At any rate this phase of one's education is being emphasized in the better schools of today. The main points in this sec-

* H. C. Morrison, *The Practice of Teaching in the Secondary School*, (Revised), pp. 407 ff. Chicago: The University of Chicago Press, 1931.

tion may be summarized in five generalizations. (1) Physical environment has a contribution to make in the enjoyment of the higher values. (2) An abundance of experiences with wholesome literature must be provided under conditions which will afford permanent interest and good taste. (3) Since most people will be merely consumers of music, the techniques of composition and production will not be stressed in general education. (4) The chief concern with art at the public school level is the enjoyment of the masterpieces and the ability to utilize art in making living conditions more attractive. (5) Appreciation cannot be taught as such, but it comes as a result of worthwhile learning experiences.

Effect of physical environment. A beautiful building, or an attractive campus, is in itself a significant discipline. It is not necessary that an object be expensive or elaborate in order to be beautiful. Beauty is often identified as simplicity, fitness, adequacy, or good taste. The humblest one-room school house can be so kept as to elicit the finest responses in pupils. A picture of the right kind, in the right place, a neatly arranged bulletin board, a comfortable seat or desk, or the appropriateness of the teacher's costume may contribute more to one's permanent attitudes than many lectures can do.

Perhaps the teacher should be referred to as the most important object in the school environment. The teacher has prestige and is important, especially to the younger pupils. What he does is more important than what he says, in the development of attitudes. In a school where there are more than one teacher there are additional responsibilities. The members of the teaching staff must strive to exemplify good will, harmony, and mutual cooperation in the conduct of the

school. The teacher himself must recognize and exemplify the values which he wishes the learners to acquire.

Technique in literature. Since the ability to recognize values rests upon a rich background of significant experiences, the teacher will provide an abundance of good reading matter from the earliest years to the end of general education. Here of course the maturity level of the learner must be carefully considered. Leaving the matter of selection to immature pupils is not only ineffective but unwise. Guidance in the selection of reading material is one of the teacher's most important functions in the schools of today. It is assumed that the teacher himself is acquainted with both the pupils and the book shelves. There must be regular periods for emphasis upon reading under conditions which encourage freedom of conversation with the teacher and informality of procedure.

The success of any work in reading and literature depends much upon the teacher. If a piece of reading matter is assigned as a matter of duty, then little may be expected. The teacher's presentation, on the other hand, should be a means of arousing genuine interest and curiosity. Pupils are sure to respond favorably to a presentation which exemplifies charm and effectiveness in the reading of selected passages. Enthusiasm is contagious, if it can be exhibited in carefully selected bits of information about why the author wrote the particular piece of literature. Usually a poem is the result of some deep feeling or impressive experience.

One illustration will have to suffice. Below is reproduced a poem entitled *The Last Leaf*, written by one of America's greatest poets, Oliver Wendell Holmes, about 1832. Whittier has called the poem a unique compound of humor and

pathos. The poem was written when Holmes was a young man of about twenty-three. The content of the poem was suggested when Holmes caught a glimpse of an old man of Boston by the name of Major Thomas Melville, familiarly known there as "the last of the cocked hats," and a survivor of the unique "Boston Tea-Party of 1774." Seeing him among the crowds of the street reminded Holmes of a dry leaf still clinging feebly to the limb of a tree in the spring and surrounded by new growths of buds and spreading foliage. The poem was a source of amusement for the young and a cause for meditation by the aged. More than sixty years after this poem was written, Holmes is said to have remarked that he himself had lasted long enough to become an illustration of his own poem. Not only did he fit his description of the old man of the poem, but he actually lived to be the last of his famous graduating class at Harvard. Having braved the frosts and snows of a long winter, he thus became "the last leaf on the tree in the spring." With these thoughts in mind let the reader now turn to the poem.

The Last Leaf

I saw him once before,
As he passed by the door,
And again
The pavement stones resound,
As he totters o'er the ground
With his cane.

They say that in his prime,
Ere the pruning-knife of Time
Cut him down,

Not a better man was found
 By the Crier on his round
 Through the town.

But now he walks the streets,
 And he looks at all he meets
 Sad and wan,
 And he shakes his feeble head,
 That it seems as if he said,
 'They are gone.'

The mossy marbles rest
 On the lips that he has prest
 In their bloom,
 And the names he loved to hear
 Have been carved for many a year
 On the tomb.

My grandmamma has said—
 Poor old lady, she is dead
 Long ago—
 That he had a Roman nose,
 And his cheek was like a rose
 In the snow;

But now his nose is thin,
 And it rests upon his chin
 Like a staff,
 And a crook is in his back,
 And a melancholy crack
 In his laugh.

I know it is a sin
 For me to sit and grin
 At him here;

But the old three-cornered hat,
And the breeches, and all that,
Are so queer!

And if I should live to be
The last leaf upon the tree
In the spring,
Let them smile, as I do now,
At the old forsaken bough
Where I cling.

Not only has the poem deeply touched millions of others, it brought back to Holmes in the evening of his life a tender remembrance and almost reverence for the old acquaintance of the days of his youth. With a knowledge of all of these facts, who would not find enjoyment in the unique humor and pathos of these immortal stanzas?

It should be remembered that in the field of general education the learner is a consumer of literature, and not a technician. The teacher who attempts to employ a system of literary dissection or technical analysis will spoil the work in literature as far as appreciation on the elementary and secondary school levels is concerned. Such analyses belong clearly in the field of specialization in the university. Literature has a message, a purpose, and technical matters of composition and classification must not obscure these values for the learner. Nor should there be too close a check made as to whether the pupil has learned this or that fact, but rather we should look for those more worthy outcomes, such as clearness of vision, breadth and depth of interests, refinement of tastes, and attitudes toward particular values. A proper attention to current literature, including selected books, magazines, and news journals, will serve to extend the scope of a

pupil's reading activity beyond the school and make it a permanent interest and enjoyment.

Technique in music. Fortunately, the schools are giving more time and effort than they once did in the promotion of musical appreciation. The obligation in this field rests upon administrators as well as teachers. The school must provide opportunities for pupils to hear and to participate in good music during all of the school years. At assembly, or other group meetings of the pupils where music is featured, it is most important that music appreciation be made a conscious objective. It is a tragedy for a principal or superintendent to assume an attitude of indifference and to consider music as a mere filler, thus ignoring it as a value in its own right. Pupils will hardly rise above their environment in this respect. Even church leaders are often guilty of employing hymns to fill time rather than as a means of praise and worship.

One of the major objectives in music is the ability and disposition to participate in music. But the major part of the musical experiences of most people will continue to be that of listening to music. Therefore special care must be taken to prepare pupils to make the most of their opportunities as mere consumers of music. Through radio and phonographic recordings it is now possible to provide classroom opportunities to hear good music under conditions which encourage growth in its recognition and enjoyment. Particularly important are the musical hours in which great composers and singers tell interesting stories from the history of music and demonstrate the various types of musical compositions. One's ability to listen effectively is enhanced by an effort to sing or play some musical instrument. Singing or playing

an instrument for one's own enjoyment, however, is one thing; asking others to be charitable enough to listen to one's amateur performance is quite another thing.

In order to encourage permanent enjoyment the teacher should introduce music in a beautiful setting. This does not imply anything expensive or elaborate. In fact reference is not made to things at all, but rather to the social and intellectual setting. If the situation in which the music is presented is pleasing, then the chances are great that the music will be remembered and enjoyed because it recalls the whole experience. All are familiar with the manner in which new songs are presented in unique settings in the motion pictures. Even old songs in a new setting will have a new meaning. Of course distractions must be carefully avoided. Having the music hour at the same time in adjacent rooms usually confuses and distracts, because the groups may be singing songs of different rhythm. Finally the attitude and personality of the teacher will be the greatest single item in a favorable setting. Some will say avoid using books, or blackboard symbols, but in the last analysis it is not so much a question of what to use as it is how to use it.

A serious psychological error has at times been made in elementary school music. Long ago teachers discarded the analytical, alphabetical approach in teaching reading, in favor of meaningful perceptual units. So also in drawing the procedure begins with attempts to draw something as a whole. To attempt to master lines, angles, and curves, and then combine these into wholes would be disastrous. It is difficult to understand why one would assume that music must be begun by stress upon the separate elements of rhythm, tone placement, scales, and so on. As early as a

child can sing at all he can sing a real song—one which is beautiful and has meaning. The details of technique will be differentiated later. The first singing is, like language, accomplished through sheer imitation. This is usually called singing by *rote*, which is an unfortunate word, since it suggests a mere mechanical performance void of meaning.

Technique in art appreciation. In general it may be said that art is the outward representation of what is felt within. Thus it is differentiated from nature which appears without man's touch. As to the point at which human performance becomes art in the technical sense, we have no concern here. Most products of the pictorial and plastic artists, like music, have resulted from some intense feeling or significant experience. In a sense every great work of art is a manifestation of an ideal, feeling, or thought which has gripped some sensitive soul. The appreciation, therefore, of any great work of art requires that we share to an extent the experiences of the master artist. To know his motive, to know the details of his experience, to see his point of view will affect one's attitude towards the value of the work.

Maturity of the learner. Before the age of adolescence boys and girls have usually not had enough experience in life to enable them to grasp the full significance of works of art. They enjoy the forms, colors, and suggested action, which appeal chiefly to the senses. Pictures must be simple and easy to interpret. After the beginning of adolescence, or the secondary school period, a greater social consciousness develops and social values emerge. Pure art and also its various applications to current life can then be emphasized. Some acquaintance with the masterpieces may be acquired by the course in the history of art. Care must be taken to

keep the objectives in mind. Our concern here is not the making of artists in the specialized sense, but rather with the part which art contributes to general education.

Popularized and commercialized art. It has long been a question as to how far to lower standards of art for public acceptance. Some contend that art is hindered by catering to popular ideals and standards. Others contend that the net outcome is a higher level of appreciation of art among the masses. A multitude suffering from hurry, overwork, and nervousness due to excessive activities and social engagements has a tendency to relax during leisure and swing to the opposite extreme. Hence the demand for something to take such people away from the realities of life is met by certain oddities of the cinema and by the hideous characters of the comic strips in the daily and Sunday newspapers. And the public is quite willing to pay for anything that will save them from wreckage in this stress of modern life. If enough time is taken for genuine rest and relaxation, the mind more readily turns to the finest of which man is capable. The Greeks of the Golden Age gave us an example of how this can be done. Leisure to them was not an occasion to escape from work, but rather a time to be free from the trivial and the commercial and to devote themselves to the finer things of the soul. This principle may be one justification for a Sabbath Day of rest and spiritual refreshment.

It is interesting to note that art and industry have been closely related in our country. And indeed this is a good point of attack in teaching our commercially minded youth. In fact the art work in schools is a result of social and commercial demands. A good example is the industrial demand for costume designers. Consider also the automotive in-

dustry. The artistic appearance of an automobile is no mean factor in making a sale. So also with practically everything we purchase. Other things being equal, the most beautiful is chosen, and, furthermore, an article has little chance of sale if it is void of the artistic touch. So also with the building of homes and interior decorations. All told, therefore, it appears that much has been gained by the commercial and industrial uses of art in raising the general appreciation level.

On teaching appreciation. Much argument has been offered as to whether there can or should be "a lesson in appreciation." On the one hand we are told that a sense of value cannot be taught, just as virtue cannot be taught. It is argued that the emotional reactions cannot be induced by the teacher but must come incidentally or indirectly. On the other hand some argue for a regular hour for lessons in appreciation. One has said that appreciation is not taught but caught. There seem to be two errors lurking in these views. One is the assumption that feeling is appreciation; that appreciation depends upon working up a high pitch of emotional reaction. It has been shown previously that feeling tone usually accompanies the recognition of value but is not the thing itself. Another error is the lesson-learning fallacy. As previously stated, appreciation is not a mental content, supplied by learning or teaching a *lesson*. It is an attitude, a disposition which results from all of the worthwhile experiences in life, including the school. The same principle applies here as in the development of character. The term "character education" is absurd, because all true education involves the building of character, and character is not something which one puts on as a cloak. Even furniture can have an integral ornamentation—be beautiful

in itself—without having extra decorations stuck on it. A parallel may be drawn from physiology. We do not feed an infant health, but rather food which if assimilated will be conducive to health. Nor do we teach culture or appreciation as such. We merely supply the materials, the examples, and the life situations, thus inducing the growth of a person who will recognize worth.

SOME MODERN FALLACIES

Perhaps this discussion should not close without a brief examination of some persistent fallacies with which a teacher has to contend. One of these is that success is measured in terms of dollars and cents. The modern mind seems obsessed with the idea that money will buy anything or everything. Indeed it will buy almost any material thing, but life consists not in the abundance of *things* which a man possesses. Money cannot buy life, health, love, honor, faith, and happiness. Something is wrong with a society in which it is customary to acclaim as heroes those who achieve some physical or mechanical feat and at the same time permit its real heroes to remain unwept, unhonored, and unsung.

In a materialistic age it is easy to define a successful business man as one who has made money and avoided bankruptcy. A successful bank is one which manages to remain solvent and make some profits. But if the bank for any reason must close its doors to the public, then it is adjudged a failure, regardless of the soundness of its administration or the type of service it has rendered throughout the years. How frequently do we hear the remark that only "successful" men should seek the high and responsible political offices of the land! Even human life and human reputation

are evaluated in terms of money, as witnessed by libel suits and damages for public liability. Love of money is a root of all evil; it acts, it talks. All seem to like it; before its shrine it is easy to bow and cast aside the thin veneer of civilization.

One of the most insidious fallacies is the idea that the newest is always the best; that our world is the best yet evolved, and that things in general improve as the years pass. It is doubtless true that certain things, such as automobiles, radios, or refrigerators, show improvement with each new model. But it certainly does not always hold true in art, literature, music, and religion. Here again is needed a sense of balance, a recognition of real worth. We look back some centuries to the masterpieces of art, the literary classics, and the Bible classics which form the basis for religious thought. The Beethoven symphonies have scarcely been surpassed. In all fields of human culture the good tends to persist because it is good. Many of the ancient arts have been lost, and no one can now duplicate them. It is doubtful that we have reached a stage of pure thought and culture comparable to those of Egypt, Babylonia, and Greece of the Golden Age.

Another fallacy is the notion that the majority is always right. People are prone to yield to an impression of universality. Thus overwhelmed, they surrender under the pressure of huge majorities. Herein is a weakness of any democracy. No democratic organization can function without an enlightened constituency. Some one from a large city tends to have prestige, because "nothing good can come out of Nazareth," a small, unimportant town. Frequently one hears the expression, "A million men cannot be wrong." Each year, business enterprises like to advertise that they are doing something bigger and better, thus connecting the two

words. Even the evangelist often counts noses in the sawdust trail as a measure of the success of his "meeting." History, as well as ordinary observation, abounds with illustrations of wrong choices made by majorities. Being guided by majority opinion is like following one's conscience; it is dependable only when it is enlightened and the motive is pure.

The last fallacy to be mentioned is the assumption that whatever exists, is right. In the realm of nature the doctrine holds that natural tendencies are correct tendencies. As long as the doctrine is applied to physical nature, naturalism holds true, but when applied to social and educational matters it is found to be quite inadequate. Applied to war, the doctrine takes the form of "might makes right." Applied to morals, naturalism knows no outside sanctions or restraints but permits the individual to follow his own impulses, desires, or inclinations, taking the natural consequences. In education, the doctrine requires us to believe that the child is naturally good and that his natural inclinations should point the way of education. To become better citizens we do not need to become more human and "natural," but rather more socially minded and more divine. Education is not a naturalizing process, but rather a socializing process. As long as these and similar values remain unchallenged by educators we may expect a continued confusion regarding genuine values. There is hope in raising the appreciation level of the coming generations.

SUMMARY

The principal arguments formulated in this chapter are summarized below.

1. The value attitudes have been neglected in the schools. Two causes for this neglect are suggested:

- (a) authoritative instruction in Colonial days left no place for emphasis upon the problem of choosing values;
- (b) the age of machines and materialism has brought undue emphasis upon means and techniques with a consequent neglect of social values.

2. The learning products in the realm of appreciation may be expressed in two ways:

- (a) first, there results a personality to whom true values are apparent when encountered;
- (b) appreciation in any phase of life is an attitude towards objects, persons, conduct, or ideas; it is simple recognition of worth.

3. Value attitudes are acquired (a) through processes of growth in culture towards social and intellectual maturity; (b) by significant life experiences in the fields of knowledge and culture; (c) by enrichment of concepts; (d) by social participation; and (e) by imitation of worthy examples of conduct.

4. Some of the principles governing teaching procedures in the field of appreciation are stated as follows.

- (a) Physical environment can be made to contribute to the enjoyment of the higher values.
- (b) An abundance of experience with wholesome art, music, and literature must be provided.
- (c) Most people will be merely consumers of music, art, and literature.
- (d) Appreciation is not taught directly but comes as a result of worthwhile learning experiences.

- (e) Ability to appreciate is a matter of growth throughout the whole span of life.
5. The maturity of the learner determines to a large extent the breadth and depth of appreciation to be expected.
6. Finally, the true principles may be emphasized by stating some of the common fallacies.
 - (a) It is fallacious to assume that success is always measurable in terms of money.
 - (b) The idea that the newest is always the best is another common fallacy.
 - (c) Quite widespread is the fallacy that a majority is always right; that wisdom resides in numbers.
 - (d) Undue emphasis upon naturalism has produced the fallacious assumption that whatever exists is right. This doctrine holds that the fittest (physically) should survive and that might makes right.

EXERCISES

1. Explain the difference between the values discussed in this chapter and the economic values of goods and services.
2. Why are great people often rejected by their own generation and honored by the next? Give examples.
3. What is the difference between appreciation and reasoned conviction? Give examples of each.
4. How is one's appreciation level related to the society or age in which one lives?
5. Secure from a first grade group, a sixth grade, and a college group lists of what these groups like best. A check list of possible likes and dislikes may be used. Note the differences as to ideals, attitudes, tastes, and interests. What causes the differences?

6. What is your first thought when one says, "I do not like classical music"?

7. As a prospective teacher, list twelve or fifteen things which you expect to do or refrain from doing with regard to appreciation in your school.

8. Should an examination in American and English literature be required for entrance to college, or for graduation? Why?

9. Discuss the following statement; "Appreciation is not taught, but caught."

10. Outline a procedure for measuring or otherwise estimating the progress of children in acquiring value attitudes. Can one deal with appreciation on a quantitative basis?

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CHAPTER IX

THE APPRAISAL OF LEARNING

STATEMENT OF THE PROBLEM

THE importance of clearly defined objectives has been pointed out in a previous chapter. Also, it has been explained that there are different types of learning and learning outcomes. Now, if it is important to know what objectives are desirable and appropriate, it is also important to know when a learner has arrived at the objectives, or to what extent he has progressed in that direction. Cases are known in which a pupil has continued for months in a subject without making any discernible progress towards the proper objectives. He may have made decided progress toward certain goals but not the ones to be expected. An example of this error is the achievement of a mere memory content in history instead of the desired rational attitudes or understandings.

All are acquainted with the fact that students receive marks and credits for learnings which they have never acquired. By persistent attendance at school or college they finally accumulated enough "credit" to force the officials to graduate them, despite the obvious fact that they were still uneducated. Such conditions indicate a need for a more rational point of view, an evaluation of our present theory and practice in appraising learning, and a set of basic prin-

ciples to guide us in making a proper appraisal of educational outcomes. The problem is fundamental and intimately connected with the whole matter of teaching and learning.

THE TRADITIONAL DOCTRINE OF PERFORMANCE

Rise of the credit system. The average teacher is a victim of a deep-seated tradition regarding the appraisal of learning. The present system of marks and credits is usually taken for granted and employed in a naive, uncritical manner. In order to appreciate the situation it is well to inquire into the origin of some of the current practices. The credit system is associated historically with high school and college courses. As subjects tended to move downward from the higher levels into the elementary school, the marking systems came also. Strangely enough, the credit units (high school units and college hours) did not, or could not, find any place in the common school.

As late as the middle of the nineteenth century the curriculum on all levels of the school system was much narrower than it is now. Students usually took all subjects in the curriculum as a matter of course, since the classical tradition and the corresponding doctrine of formal discipline had great prestige. But during the latter half of the nineteenth century scientific studies and various forms of mechanical arts and activities invaded the curriculum of American schools. These changes resulted from the increased prestige in science in connection with expansion in industry, from the agitations of such men as Herbert Spencer, Charles Darwin, Friedrich Froebel, Heinrich Pestalozzi, and others, and from the Morrill Act of Congress in 1862, which granted

land for the endowment of colleges of agriculture and the mechanical arts. These and other factors caused an unprecedented expansion of the curriculum on all levels of the system.

With an enlarged curriculum based upon the popular demand of an aspiring democracy came an unprecedented influx of students from all walks of life. Because of a curriculum offering too extensive to be taken in full by any person, and with a mass of people not interested in classical studies, the inevitable elective and credit systems arose. It then became a question of how to equalize Latin and Greek with other subjects such as science, history, mechanical arts, or commercial subjects. The net outcome was a compromise whereby there was adopted a system of credit units based on the time element. A unit in high school consequently came to be defined as a minimum of 120 clock hours of satisfactory recitation in class. Likewise in college a semester hour amounted to one class meeting per week of at least 50 minutes in the clear for a period of 18 weeks. In this connection it should also be pointed out that the nineteenth century witnessed the completion of an additional timing device in education, namely, the arrangement of an educational ladder into an eight-year elementary school, a four-year high school, and a four-year college.

The educational implications of this time element are obvious. Education tended to become confused with schooling, and quantity superseded quality. The temporal, quantitative units became more alluring to students than the real learning objectives. Curriculum offerings tended to take on a quantitative aspect. Requirements for entrance and for graduation assumed the form of courses or credit units to be

passed or achieved. As a result the whole program of studies was made to conform to the time required to cover certain ground, rather than to achieve the proper learning objectives, or to become educated.

Science and the measurement movement. In the last quarter of the nineteenth century scientific method began to be applied generally to the problems of education. The first psychological laboratories were established during this time. The child study movement was launched on a scientific basis under the leadership of G. Stanley Hall. Alfred Binet in France had begun the testing of intelligence, or the measurement of higher mental processes, in the last decade of the century. At the same time J. M. Rice inaugurated the movement to measure achievement in the school subjects. Laboratory techniques in general began to be applied to educational problems, such as the study of the physical basis of reading as revealed in a study of the movements of the eyes.

The application of scientific method to school problems was of tremendous importance in building a science of education. It revolutionized the curriculum, reorganized the school system, and improved generally the techniques of teaching. Without detracting from the importance of these changes, it must be stated, however, that at least one unfortunate practice grew out of this period, namely, the extreme emphasis upon quantity in education. Such prestige was attached to quantitative data and measuring devices that teachers and students alike received the impression that education is merely the algebraic sum of one's performances as indicated by the accumulation of marks and credits on the school record. Even psychological theory dropped to the low level of a mechanistic conception of man, allowing him

no behavior except the defensive functioning of muscles and glands. These various influences had their effect in widening and deepening the chasm between measured performance and known learning products.

Evils of standardization. It is not easy to appropriate the good in a movement and reject the bad. Beginning in the last two decades of the nineteenth century there arose a movement to standardize education on all levels. The discussions centered about such problems as college entrance and graduation requirements, standard credit units, high school graduation requirements and curriculum content, especially the quantitative aspects. The rise of the accrediting agencies, such as the North Central Association of Colleges and Secondary Schools, assumed the task of enforcing standards upon institutions in general.

The good which came from these movements was immeasurable with respect to increased efficiency and service rendered by the institutions as such. But the ultimate effect upon teachers and learners was not always so good. Inevitably there grew up the practice of comparing one pupil with another by means of a grading or marking system. This meant that a pupil might know by his marks how he stood with reference to his fellow pupils, but at the same time have little or no idea of how he stood with reference to his own education. He might perform like others and measure up to the standard, but at the same time miss the true learning products. It is well known to the reader that under our mass system of education we have too often sought to turn out a standardized, uniform product comparable to the products of industry.

Learning versus performance. Elsewhere in this book a

distinction has been made between learning and mere performance. It seems fitting here, however, to say that the cause of learning suffers when teachers and pupils alike persist in the belief that quantitative performances, as measured in terms of marks and credits, is a valid measure of education. It is not intended to leave the impression that all people have thus missed the mark, but without doubt the practice is remarkably widespread. It is refreshing to observe that in certain quarters of our land there are movements arising deliberately to overthrow this formalistic, quantitative concept of education.

CURRENT MARKING SYSTEMS

The assumption of quantity. As previously intimated, we owe much to the measurement movement in education. The attempts to refine our examination techniques and objectify our appraisal of pupil progress are all well and good. Our advance in those respects is quite obvious. The chief error has been in the assumption that credit units, which were undoubtedly intended at first as the minimum in time, are a measure of achievement. Just how the number of hours or days of attendance upon a class, or of meeting a professor, should ever become a standard of appraisal seems strange. One wonders what would happen if physicians could ever be persuaded to dismiss a patient on the evidence that a certain number of visits had been made or a given quantity of prescriptions administered.

Types of marks employed. Since marks of various kinds are so generally used today, it is necessary to examine the merits of some of the more common types. These include the so-called percentage system, the letter system, the pass-

fail system, ranking, and descriptive terms such as excellent, good, average, poor, and failure. Some use the letters *S* and *U*, designating satisfactory and unsatisfactory, according to the child's capacity, and not in the sense of pass and fail. The newer and better trend is away from marks and toward an emphasis upon descriptive sentences and phrases which describe in full the character of the child's progress in the school.

One of the oldest types of marks is the percentage system. Since the marks usually range from 65 or 70 (passing grade) to 100, it is clearly not a percentage system. It is rather a scale of 30 or 35 points of unknown values or intervals. A mark of 90 per cent on a school subject is practically meaningless not only to others but also to the one who assigns it. It cannot possibly mean that the learner knows 90 per cent of all there is to be known about the subject, for not even the teacher knows that much about the subject. Since the examination is only a sampling of what has been taught, it cannot mean 90 per cent of the course as taught. Strictly speaking, it cannot even mean 90 per cent of the test material, because the value of each question is not the same and is usually not known. Often teachers include ten questions or problems in a test and arbitrarily assign a value of 10 per cent to each question. As a matter of fact it would be difficult to select ten questions of equal difficulty without a long statistical investigation. Obviously an item missed by 90 per cent of a group of children is more difficult than one missed by only 25 per cent. A simple way to avoid this criticism is to determine the per cent of persons who missed each item of the test and thereby determine the difficulty of each item or question. Then a weighted score value can be assigned to

each test item. One of the ten questions might have a weighted value of 1.3, while another might be worth only 0.85. There is a simple statistical procedure for making this distribution of values, but it cannot be included in this treatment. Books on educational statistics are abundant and explain how the standard deviation units may be employed for this purpose.

The system of marking most commonly employed in American schools is the letter system. It usually includes the letters *A*, *B*, *C*, *D*, and *E* or *F*. In such a system, *C* is commonly considered the average mark, or the one most frequently assigned. Some teachers, and some entire school systems, employ these letters but assign to them certain values in per cents, such as *A* equals 93 to 100. Those who use this scheme are in reality still holding on to the old percentage system and hence defeating the purpose of the letter marks. The range of points on the percentage system assumes a fineness of discrimination in achievement difficult to make. These letter grades came into use to obviate this difficulty and to provide also a mark which would indicate relative rank among members of the group. A teacher can easily discern the average or usual paper. Also he can select those below or above this average, and so on in each direction. This assignment of marks can be done without any regard for numerical values of the letters.

In using new-type tests the raw scores are usually expressed in numerical values, varying in size according to the type of test used and its length. When it is necessary for teachers to report pupil progress in letter marks, the raw scores must be translated into such marks. In making this translation many teachers make the mistake of beginning at

the highest score, assigning to it a mark of *A*. Obviously it is better to work from the average, since most of the group will make scores in that region. A crude method which any teacher can use with some advantage is to find the common average of the scores and assign a mark of *C* to the scores at this average and to those just above and below it. The other letters are assigned in proportion to the distance of the scores from the average, up or down. The distance a mark of *B* extends above that of *C*, for example, depends upon the per cent of *B* marks desired in the distribution.

For a more accurate method of distributing marks a means is needed to determine the range of each letter grade on a scale extending from the highest to the lowest possible score. For example, one needs to know how far above and below the average score the *C* range extends, and how far above the *C* range the *B* range extends. In schools in which an attempt is made to distribute marks in a uniform manner, it is customary to employ the normal curve of probability. According to this curve there will be about as many *A*'s as *E*'s or *F*'s, and about as many *B*'s as *D*'s. The most frequent mark will be *C*, the average.

In the earlier attempts at precision in distributing marks, two probable error* units were made the measure of each letter grade on the scale. On the basis of a curve divided into five steps these were distributed as follows:

2 per cent received *A*'s
23 per cent received *B*'s

* The probable error is a statistical unit used to measure variability in a group. The standard deviation is a similar unit, usually called sigma. Both are distances on a scale used to show variation from the average or mean. The standard deviation is slightly larger than the probable error.

50 per cent received *C*'s
23 per cent received *D*'s
2 per cent received *E*'s or *F*'s.

A more recent tendency has been to use the normal probability curve with the standard deviation as the scale unit. When five divisions are made on the scale according to this plan, the following distribution occurs theoretically:

7 per cent *A*'s
24 per cent *B*'s
38 per cent *C*'s
24 per cent *D*'s
7 per cent *E*'s or *F*'s.

Some recommend as the unit 1.2 sigma (standard deviation) instead of 1 sigma, since this plan will give fewer *A*'s and *F*'s and more of the intervening marks. Of course no teacher should attempt to follow this scheme of distribution rigidly, but rather it should serve merely as a general guide. As a rule the marks for large, unselected groups will vary as follows:

5 to 10 per cent *A*'s
20 to 25 per cent *B*'s
40 to 50 per cent *C*'s
20 to 25 per cent *D*'s
5 to 10 per cent *E*'s or *F*'s.

The details of the procedure in distributing grades by these statistical devices cannot be included here. The reader should refer to standard works on educational statistics.

The passing grade fallacy. The usual conception of a passing mark is that level of performance below which the work will not be tolerated by the teacher. Under the per-

centage system the person who just passes, for example with a mark of 70, gets full credit, while the one who makes 69 fails and receives no credit. Manifestly, there cannot be that much difference between 69 and 70, especially since these marks are largely subjective.

This situation suggests the need of a critical point at which to make such a distinction. Let us use the physician again as an illustration. Suppose he should dismiss his patients on a passing grade, say 70 per cent. This may mean that the patient feels 70 per cent well, or that his pulse is 70 per cent normal. On the contrary, the physician has a knowledge of the critical score for pulse and for bodily temperature. Variation from these scores is a cause for investigation. The patient would hardly be satisfied in accepting a mark of 70 or a *D* in these respects.

Now, where is the fallacy? It is not in having a point at which a pupil's work becomes acceptable; there must be such a point. The trouble lies in the acceptance of a degree of performance as a substitute for the true learning products. This error is further aggravated by assigning the mark in a whole course rather than by clearly defined learning units. Too often, credit is allowed for the reproduction of bits of knowledge unrelated and unorganized. The real passing mark must be the point at which true learning occurs, a point quite different from the smallest quantitative performance usually tolerated by a teacher.

The function of marks. In order to divest ourselves of the fallacies and inconsistencies previously described, it will probably be necessary to discontinue all marks as a means of appraising learning. They should have no relationship to the matter of passing or failing in a subject or a grade.

Whether or not the learner has acquired the learning objectives should be decided on another basis, as will be suggested later. Then if marks are used at all, they could be used to distribute honors or special privileges. If this is done, great care must be taken to avoid giving too many *A*'s and *B*'s, because in that case the pupil receives empty honors. *B*'s and *A*'s in all instances should stand for distinction, or differentiation from the group. Nothing short of real learning of each unit should be tolerated, except in those special cases involving incapacity. But these should not receive any marks at all, as any such assignment of marks would be misleading. From all of those who achieve the learning outcomes, there can be selected those who are to receive the honors. Criteria can then be set up as a basis for awarding the honors, but these criteria should be qualitative and require something over and above the point of actual learning of the units in the courses.

PRINCIPLES OF CORRECT APPRAISAL

The problem of appraising learning is by no means simple; it requires the best effort on the part of the teacher. While much remains to be discovered about appraisal, it is now possible to identify certain basic principles which must be taken into account in arriving at a correct appraisal. These will be discussed on the following pages. For the convenience of the reader these are stated at the beginning without any special order of merit. (1) Correct appraisal requires a recognition of the true nature of learning. (2) The different types of outcomes must be identified in making a true appraisal. (3) The true units of learning must be identified. (4) Learning is qualitative. (5) The function of measuring

instruments is to help identify the learning products. (6) Appraisal must be analytical, not comparative.

Recognition of the nature of learning. Correct appraisal requires a recognition of the true nature of learning. It is axiomatic that a knowledge of a thing is necessary to its appraisal. The teacher more than any one else should know what it is to learn, but teachers in general doubtless need to examine themselves with reference to this matter. It is not difficult to find situations in the average school in which examinations are given and marks assigned without the slightest evidence of the presence of the true learning outcomes. One member of the group may receive a mark showing that he compares favorably with a fellow pupil and hence derive some satisfaction from his showing in the class. And yet neither of them may have attained the desired learnings of the course. A good memory may enable one to remember enough that the teacher or the book said to make a favorable impression upon the teacher and secure a passing grade. This situation seems worse when it is realized that both learner and teacher are too often unaware of this condition of nonlearning.

In the content subjects a vicious form of nonlearning is known as verbalism. Students often use technical words accurately and recite glibly without having the slightest understanding of what they are saying. Lecturing has been defined humorously, although not altogether inappropriately, as that process by which there is transferred from the notebook of the professor to the notebook of the student material which passes through the mind of neither. It can truly be said also that much the same process occurs in the return trip of this material. Verbalism is encouraged be-

cause the average learner is so docile and passive in attitude that he takes printed materials as something to be learned, rather than as devices to aid in learning. Strictly speaking, one does not learn *what* is in books; one may, however, learn *from* what is in books.

Perhaps the wrong use of textbooks by inexperienced teachers is a cause of much verbalism in our schools. The children of today live in a world of books and other printed materials. It is imperative, therefore, that the teacher insist upon the wise use of these valuable means of learning. This precaution must begin as low as the first grade, because even there the child tends to repeat words in a formal, verbalistic manner without actually associating them with the ideas or objects for which they stand. The extent to which learners on all age levels do this thing is not sufficiently understood. Many facts and details of nature cannot be adequately presented in books, and hence those who rely upon mere descriptions or explanations in words often fail to obtain even an approximate idea of what the facts are. Often this type of performance is designated as book learning. It is true that all "book learning" is bad, because books are not learned; we merely learn from them; they are our best helpers because they are records of the finest thoughts of the present and the past.

It has been pointed out at some length in another chapter what the characteristics of true learning are. It must be emphasized here again, however, that true learning is a form of growth in the organism, an accretion to personality. The teacher must be concerned not with the number of hours expended, recitations made, or marks accumulated, but rather with the question as to whether the proper changes

have actually occurred in the learner. One must not count hours and marks, but true learning products.

Differentiation of types of outcomes. The different types of outcomes must be differentiated in making a true appraisal. No single method is adequate to measure all outcomes; there must be a different procedure for each type of learning. In another connection the immediate outcomes have been classified into three groups: (1) habits, skills, and arbitrary associations, including memorizing; (2) knowledge, insights, and understandings; and (3) ideals, tastes, interests, attitudes and appreciations. It was pointed out that this first group includes those learnings which are acquired by repeated effort resulting in practice. Using other terminology we may describe these as neuro-muscular facility, memory content, and automatic habit systems or patterns of response. When this type of outcome is desired, the proper procedure is a practice technique. As a rule there is not so much confusion in the appraisal of this type of learning outcomes, because the results are so immediately obvious. One can either perform the skill or he cannot. He can spell a word, or repeat words from memory, or he cannot.

Now, in the second group of outcomes the problem becomes more intricate, because the evidences of learning are not so apparent. Here the language factor enters more prominently into the situation. Practice is not the procedure here, but the higher mental operations are called into action. Not only are the outcomes different from those of the skill type, but the learning processes are entirely different. Through observation, rational analysis, integration, and organization of experiences one arrives at knowledge, insights,

and understandings. Of course a pupil either understands or does not understand a given situation, but the evidence is not always easy to gather by the teacher. Here again comes the question of verbalism. Language factors involved make it difficult to determine whether the pupil is expressing his understanding or merely repeating the words which record another person's understanding. At any rate, the teacher makes some progress when he is perfectly clear as to whether he is trying to develop a skill or an understanding. He must not accept the one if the other is desired.

In the third group of outcomes the problem of appraisal is equally difficult and intricate. Here again the old proverb finds an application, that the "proof of the pudding is in the eating." The best evidence that one appreciates good literature is that one voluntarily reads it with enjoyment. In the literature class a pupil may assume an attitude of interest and enjoyment of a work just because it is expected of him or because he knows the teacher will be pleased. Furthermore he may write in glowing terms about a piece of literature on a test when in actuality he is resolved to bid farewell to such literature at the end of the course. The learning product is not present. Appreciation has not been achieved.

And so it is also with music and art. Something is wrong with one who professes to love good music and yet never patronizes the best musical productions. It is not easy, however, for a person to conceal very long his real attitude regarding the great values of life. There will be moments when a casual remark or a facial expression will reveal one's correct attitude. Such evidence may deserve more weight than all of the pronouncements to the contrary. It is well known that ethical knowledge may be easily mistaken for moral

conduct. Knowing and saying what is right and proper is one thing; but doing it is quite another thing. Practically all tests of social and moral attitudes break down at this point. A person tends to answer what his attitude should be rather than what it is. Close observation of one's acts is better than words. A person cannot long conceal his ideals, tastes, interests, and appreciation when all restraints have been removed. In general it may be stated that education makes a person different, while mere storage of facts amounts to little. A merely informed man has nothing to brag about. Nothing can take the place of a mature personality, attuned to the great values of life and able to cope with every aspect of his environment.

Identification of true units of learning. The true units of learning must be identified if correct appraisal is to be made. Herein lies one of the crucial factors in appraisal. The units of learning are comprehensive wholes which are capable of being learned; that is, it can be known when they have been mastered. A person does not learn a whole course or subject as one acquisition, but each subject or course consists in definite aspects which must be learned. Let it be emphatically stated here that the units are not bodies of subject matter; the quantity of subject matter digested is not a valid measure of one's learning. One pupil may require twice as much reading of subject matter and teaching as another in mastering a unit of learning. The true products are changes in the learner, not the number of thoughts which have passed through his mind.

A common way in which this principle is violated is to give a test on a whole course and appraise learning on the basis of performance on the test items. It is evident that by

this method a teacher may discover the absence of learning better than its presence. It is conceivable, however, that one may have the true learning products and yet fail on certain performance tests which are not valid measures of true learning. One may understand a unit in history, for example, and yet be unable to pass a test requiring certain facts as presented in the textbook. Likewise one may muster enough isolated facts about a course to pass a test of performance without ever actually mastering a single unit of the course. These are not hypothetical cases but can be observed by any one who will take the time to investigate them.

Qualitative aspect of learning. Learning is qualitative; it must not be identified as a magnitude. Two general points of view regarding intelligence have been widely held in this country. One is that intelligence is the aggregate of minute, specific learnings or stimulus-response connections. A moron would probably acquire only three or four thousand of these, while a genius might acquire as many as a hundred thousand. This view makes intelligence purely a quantitative matter. The other view stresses the importance of the cerebrum as an organ of adaptation and integration of experiences. The result of learning is growth in apperceptive capacity and power of the organism as a whole. In this case the change is not in magnitude of cerebral connections but in the quality of the organization, or the character of the organism itself. Only the latter seems to harmonize with the facts of learning behavior. At any rate, the point of view adopted will have an important bearing upon the problem of appraisal of pupil progress.

Suppose a court trial is in progress. A witness testifies against the defendant giving perfect answers to all questions

for an hour. But suddenly an answer is given which contradicts all of the other answers and shows that the witness was giving false testimony, or at least was talking about another man than the one on trial. It is easy to imagine what the jury would do in this case. They would not condemn a man on such a testimony. If 90 of the answers were in support of the prosecution and 10 others should contradict the 90 or even leave a serious doubt, the jury would hardly condemn the defendant on a 90 per cent score. All of the testimony in fact would fall down. A close analogy is found in examinations, as any experienced teacher can testify. Often a student gives rather perfect answers to most of the questions in a short examination on a unit, and yet in a crucial question he may make it perfectly clear that he has not acquired the basic understandings of the unit. Under the quantitative theory he would pass the unit or course, especially under a teacher who merely counts points without considering the significance of what was said in the wrong answers. When quality is considered, there is no learning present, and the apparently correct answers were probably only memorized content.

The function of tests. The function of measuring instruments is to help identify the presence of the learning products. Tests are not the only source of evidence of learning; the teacher gathers evidence from many other sources, including written work, oral discussion, general interest, attention, and habits of industry. Knowledge of the pupil's progress in learning is of primary importance to the teacher as an aid in guiding further learning. Equally important is this information to the learner, since a knowledge of one's success is a significant factor in learning. Secondly the

information is of value to the parents and to the principal or the superintendent in the management of the school.

The beginning teacher should understand the general nature of tests and examinations. It must be remembered that in making measurements in education we are attempting to discover inner changes which have occurred in the learner. Such measurements cannot of course be made directly. The only means is to arrange appropriate stimulus situations which require the learner to respond in certain desired ways. On the basis of these results we infer the presence or absence of the desired learning outcomes.

All tests and examinations have certain very definite limitations. In the first place they are perhaps never perfectly valid. That is, they do not always measure exactly what they are designed to measure. When a rational type of response is sought, we cannot always be sure that the learner's response is rational or mere memory content. Tests are more valid in theory perhaps than in practice. Often in the essay type of examination the teacher over-emphasizes the technique of composition of the learner's paper and thus forgets the objectives being measured. Also lack of validity may be observed in cases in which the teacher stresses certain objectives in teaching but tests for an entirely different set of objectives.

Another shortcoming of tests is their tendency to be unreliable. By reliability is meant the self-consistency of a test, or the degree to which it can be depended upon to yield uniform results. The essay type of examination is usually of low reliability because of its limited sampling of the items or units in a course, and because of the manner of marking. Suppose 100 good questions could be easily selected to cover

the work of a course. Now if only 10 are actually selected for the test, the question arises as to whether different results would be obtained if another 10 were selected, or a third set of 10, and so on. Certain types of objective tests avoid in part this weakness by including a larger number of test items and by better scoring features.

The extreme subjectivity of many tests is another weakness. The essay examination is almost altogether subjective in the scoring or marking. That is, the mark assigned depends largely upon the one who does the marking. It is also well known that the same teacher will assign different marks to the same paper if read at different times. Again the new-type, objective tests avoid this variation in scoring. The reasons for wide variation in subjective markings are many. Teachers stress different objectives and assign more importance to some outcomes than to others. Some teachers attach more importance to the mechanics of composition of the test paper than do others. Some desire original forms of expression; others wish to have the textbook reproduced. Some allow partial credit in arithmetic, for example, if the solution of a problem is correct in principle but in error in calculation; others allow no credit in such cases.

One of the more serious defects of tests in general is that they tend to yield comparative scores and not sufficiently detailed analyses of pupil progress. If all papers are marked on the basis of the group average, then any one of the group may know his standing with reference to the group but not his standing relative to the achievement of the learning outcomes. New types of tests are being designed to overcome this weakness by a closer scrutiny of the desirable outcomes and a refinement of the measures.

In spite of the shortcomings of tests they are useful devices in appraising learning if properly used. Standardized, commercial tests are useful in school surveys or for purposes of general classification of a group of pupils in the process of school grading. But they are of comparatively little use in the appraisal of learning. They are too generalized in content to meet the specific needs of the classroom teacher. The standardized tests may be used in the classroom, however, to enable the teacher to know whether the pupils are up to the average for their grade. This information must never be confused with the genuine appraisal of learning in each case.

Each teacher should acquire the technique of constructing his own tests. These can be made objective, valid, and reliable by means of the techniques commonly employed in educational statistics. Then when the tests are given, the teacher will not be satisfied with a mere checking of the right and wrong answers and the assignment of a set of comparative scores. There must be an analysis of the character of the answers, both right and wrong, with a view to discovering the pupil's trend of thought and the types of errors made. The score he makes is of relatively small consequence. What the teacher needs to know is the quality of the responses as compared to the demands of the objectives of the course. This is in brief the chief function of tests and examinations. If pupils are to be grouped for honors or ranked for other purposes, then comparative scores may be useful.

Analytical appraisal. Appraisal must be analytical, not comparative. Stated in other terms, this principle means that appraisal is a form of individual diagnosis; not only is it a diagnosis of the learner but of the learning also. It is

obligatory upon the teacher to appraise learning at all levels of the school system. For the purpose of illustration let us try to visualize the progress of a pupil through the elementary school and to the end of general education. This journey will consist in mastering a series of learning units, which may be designated educational hurdles. Perhaps it should be re-emphasized here that the units of learning are more comprehensive and less intensive on the lower levels, and tend to be differentiated into less comprehensive units with greater depth of penetration as the higher levels are approached. For example, a unit in history in the fifth grade might be two or three units in high school and a whole course in college. The order in which these hurdles will be mentioned has no special significance; they may be achieved more than one at a time.

Let us begin with the primary adaptations. The first of these is reading. In order to learn how to read, certain definitely measurable elements must be mastered. Among these are correct adjustment of the eyes and their movement along the printed line. This can be observed and evaluated directly. Then must come word recognition. Informal exercises will be sufficient to test this achievement. Then the learner must acquire word meanings, sentence meanings, and paragraph meanings. Objective tests and even standardized tests in silent reading are adequate for this purpose. In oral reading there is a standardized test procedure available for complete diagnosis, or, in this case, appraisal. Then comes the measurement of speed in reading. Speed norms are available for each grade in connection with standard tests, in case comparisons are desirable. Speed consists of very definite elements which need to be measured separately if

appraisal is to be complete. These elements are visual span, duration of fixation pauses, and regression movements, all of which can be quite accurately measured by the technique of photographing eye movements. Finally there is the element of phonics. The progress of a pupil in grasping the fundamental sound combinations in the language is revealed in his success in attacking new words. No particular difficulty or problem is involved in appraising progress in this respect. When the fourth grade is reached and reading for content is desired, the regular objective tests may be used to advantage; that is, the tests constructed by the teacher and checked for validity and reliability. These include the following types: true-false, completion, best-answer, multiple-choice, matching exercises, identification exercises, and rearrangement of items, such as events in a chronological order.

As the next hurdle, consider handwriting. Various charts and scales have been devised for evaluating the quality of handwriting. Usually speed and quality, or legibility, are the chief items considered. Speed is determined by the number of letters written per minute. This item is considered in view of the ordinary demands of life for reasonable speed. Regular norms are available for comparative purposes, both in speed and quality. Appraisal requires, however, that the traits which make up quality be measured in order to make a true appraisal of progress. These traits are alignment, uniformity of slant, spacing of letters and words, letter-formation, and quality of line. In this manner the specific points of achievement can be made known to the learner.

For the spelling hurdle the child must learn to spell the

words most frequently used in society. These are scientifically assigned to the various grade levels on the basis of their need and their difficulty. The measurement of spelling for comparative purposes is done by standard spelling scales from which spelling tests are made. The actual test of spelling in the case of each child is the spelling of the words in writing. This is done both as a spelling exercise and in all of the written work of the pupil. Many years ago spelling was taught orally, but we now think that the only real test of spelling ability is the habitual spelling of words in ordinary composition work.

The language adaptation constitutes an important hurdle. There are three phases of this achievement, each calling for close appraisal. One of these objectives is spoken language, which is best observed and evaluated in conversation and oral discussion. Such items as pronunciation, enunciation, and fluency are informally appraised. One has them or one does not have them. The next is written language. Here may be used both the objective and the regular standardized tests, many of which are now available. These tests show in detail what the errors in written composition are and the progress made from time to time by a comparison of succeeding test scores. The third phase is one's ability to discern what good language usage is. This is a kind of grammar test, in that it calls for discrimination in the use of the parts of speech and in other matters of syntax. Any experienced teacher knows that a pupil may understand grammar and be quite deficient in the actual use of language; the one is a science, and the other an art or skill.

Another primary adaptation is the achievement of number concepts, or quantitative relationships. In appraising this

type of achievement the teacher must look for two fundamental aspects of the pupil's responses. The first is the *result* of the child's performance, either oral or written. This phase can be evaluated in a simple manner by checking the answer for correctness. The second phase involves the mental processes employed by the learner in his number work. Standard tests or work pads in arithmetic can be used to check answers which are reached by the learner; even the learner can check his own results. But the more important aspect is the mental procedure which is used by the learner. This is done by an oral tracing process whereby the learner speaks orally the steps taken in arriving at the result. This phase of appraisal is exceedingly important, because, after all, the major outcome in number work is the acquisition of a system of precise thinking.

Now, in the subjects usually designated content subjects, the objectives are not so well defined as in the skill subjects. Much progress, however, is being made under intense study of objectives and the arrangement of courses into units of learning. In each field of learning, such as the physical sciences, the social sciences, and literature, there are large numbers of hurdles to be passed, because each course includes several learning units. Space forbids the treatment of all of the various unit hurdles in these fields, and therefore only one illustration will have to suffice. Let us consider the appraisal of learning in history. Each course in history will consist of a definite number of learning units. In each of these units the learning must be appraised. In the first place the learner must have a knowledge of facts. This objective can be readily measured by an objective test of the recall and recognition types. This is perhaps the

easiest test to construct, although its reliability is not high if the test is too short. Time orientation is another objective. This may be measured by an objective exercise requiring events to be arranged in chronological sequence.

Other objectives in history include the ability to analyze events, understand cause-effect relationships, draw inferences, generalize, associate events and facts, dates, and characters. These should be measured or appraised separately by appropriate objective tests. Matching exercises are useful in measuring associations. Arranging events in causal sequence is a valuable device. The relative value or importance assigned to historical events and movements can be tested by the ranking type of exercise. The learner's capacity to generalize can be tested by three types of response: the learner's ability to use or apply the generalization, which may be a definition or a principle, the ability to explain it, and finally the ability to state the generalization in his own words. After using the objective tests, the teacher may finally employ in history the essay examination to check on the pupil's progress with respect to his ability to organize and integrate his ideas. After all of the written tests have been exhausted, there still remains the oral performance of the learner. The teacher's daily contact with the pupils will enable him to make a fair estimate of the general progress that has been made in each phase of the learning. The best practice seems to be to gather all the evidence of learning that is available, and then without favor determine the extent and in what particulars learning has occurred. Thus the individual's rating will be made in terms of the desired outcomes, and not in terms of average class performance.

The detailed appraisal just described will be made for each

unit in history, and in like manner for all of the other fields of knowledge. In the chapter on the rational type of learning the problem of units of instruction is treated at some length in connection with history and the other social sciences. Here a note of caution should be sounded. Appraising the results of learning in each learning unit is not the same as testing for isolated bits of knowledge or information. A true unit is a meaningful and significant whole which can not only be understood but can be so generalized as to facilitate the learning of a still larger whole of which the unit of learning may be a part. The careful teacher will remember that units in history are not bodies of subject matter or bits of knowledge, but significant, comprehensive phases of this science; they require essential attitudes and understandings.

APPRAISAL OF RESULTS OF SOCIAL STIMULATION

In addition to an appraisal of the immediate results of classroom teaching, there are other learnings more subtle, more intangible. Many of these are incidental and often acquired unconsciously. They may be habits of conformity to folkways, sensitivity to mass opinion and propaganda, or established attitudes towards particular groups and public issues. These types of response are particularly observable in people above ten years of age.

Susceptibility to social stimuli. It is a matter of common observation that people, even children, differ as to their readiness to be influenced by others. Provincial speech and mannerisms are taken on more readily by some than by others. Some adapt themselves to new acquaintances and new situations more quickly than others. Abrupt fashion changes find relatively few customers at first, but later the masses

conform. It seems clear that this sensitiveness to social environment is important in estimating the total personality with reference to fitness for certain life situations. It must not be assumed, however, that one who is susceptible to social stimulation is always a conformer; one's keen perception may result in nonconformity and even social reform.

Judgment of social values. As soon as a student develops a social outlook and point of view, the problem of social values arises. Cleverly devised tests now give a fair estimate of social and ethical judgment, although they cannot be fully relied upon to measure true attitudes. The reason is that true attitudes and actions do not necessarily agree with one's better judgment. Moreover, one's attitude in marking such a test may be one of conformity to conventionality and not to one's own standards. In other words, people are inclined to behave as influential groups expect them to behave.

Perhaps the evidence of the presence of sound judgment of social values can best be obtained indirectly. The clue is usually furnished by the sum total of one's actions, especially when customary restraints have been removed. It should be remembered, however, that one's judgment of social values is subject to sudden change and may never be thought of as a constant. The reader is referred to the chapter on appreciation for a fuller treatment of this question.

Attitude towards groups and issues. Ordinary tests of achievement may reveal knowledge about social groups, institutions, and public issues, but this knowledge may be nullified by perverse attitudes not revealed by the tests. Family prejudices, community traditions, and racial hatred may outweigh the influences of the school. In such surroundings a public issue can hardly be decided on its merits.

If such attitudes were always constant and did not appear and disappear as occasions arise, they might be more readily measured by formal tests. Perhaps the teacher must be content to be able to detect their presence from time to time and seek to counteract antisocial tendencies by emphasis upon positive activities and instruction.

Right attitudes towards social groups and public issues can hardly be taught as specific learnings in the classroom. They are rather resultants of a long series of carefully chosen experiences with the finest thoughts and deeds of the ages through contact with great writings and with men and women of culture. A fully developed personality should not be thought of as one who has a store of attitudes but rather as one who assumes wholesome attitudes in all important life situations.

APPRAISAL OF THE INTEGRATED PERSONALITY

The preceding discussion of appraisal of learning may have left the impression that the aggregate of one's specific learnings constitutes one's education. Such is not the case. Rather it should be stated that one's education makes possible these responses known as skills, attitudes, understandings, and appreciations. Any form of analysis must deal with specific parts or aspects but not to the exclusion of the concept of the whole.

Unity of trait actions. Most attempts to measure personality actually resort to an analysis of traits and tendencies which supposedly equal personality. For instance such traits or trait actions as introversion-extroversion and dominance-submissiveness are measured and sometimes assumed to be clues to personality "types." The evidence for distinct personality

types, however, is not convincing, since any person may be dominant in one situation and wholly submissive in another analogous situation. Most so-called trait actions are superficial concepts used to describe particular response patterns. The real integrating principle, as explained elsewhere, is the recognition and acceptance of those values and verities which have characterized great personalities in all ages and all races of people. If the system of education takes care of these, the other things will be added. If these are neglected, there is nothing left to integrate the various habit systems.

Predicting behavior. Predicting the success of a person in an occupation is a matter of predicting behavior under given conditions. The process is one of deduction. People who respond in certain ways or manifest certain traits usually succeed. A particular person gives evidence of these characteristics; therefore this one will probably succeed. In other words, the person is the integrated organism, while the various responses are specific trait actions which enable us to observe one's "personality." The teacher's task then is to assist boys and girls to become persons who will have the ability and disposition to make right responses when important situations are encountered.

SUMMARY OF PRINCIPLES

1. The problem of appraisal is intimately connected with the whole matter of teaching and learning.

2. The traditional doctrine of performance in education is related to the conditions which gave rise to the credit system.

- (a) Curriculum expansion in the 19th century necessitated the adoption of electives and credit units, thus emphasizing the quantitative factor.

- (b) Education tended to become identified as schooling or subject matter covered.

3. The invasion of scientific method into the field of education further emphasized the quantitative concept of outcomes.

- (a) The measurement movement improved and refined examination techniques, but at the same time it caused an overemphasis on comparative ratings of pupils.
- (b) Objective measures have helped to clarify outcomes and make appraisal easier.
- (c) The standardization movement in education has aided schools as such, but it has produced unfortunate results relative to appraisal by emphasis placed upon quantitative norms.

4. Current marking systems tend to yield scores which are merely ranks within a group, rather than an appraisal of learning with respect to desired outcomes.

5. The principles of correct appraisal of learning include the following:

- (a) Correct appraisal requires a recognition of the true nature of learning.
- (b) The different types of outcomes must be identified in making a true appraisal.
- (c) The true units of learning must be identified.
- (d) Learning is qualitative.
- (e) The function of measuring instruments in education is to help identify the learning products in the actual behavior of the learner.
- (f) Appraisal must be analytical, not comparative.

6. An appraisal of learning must take account of learnings acquired outside the classroom more or less incidentally and unconsciously during the school period of life. These may be favorable or unfavorable in the light of the desired educational objectives.

- (a) Localisms, prejudices, hatreds, and other antisocial attitudes can at least be identified, if not measured.
- (b) The teaching program must lay a broad foundation of basic knowledge and culture so as to produce citizens capable of discerning true social values and of acting in desirable ways.

EXERCISES

1. What is the meaning of a mark of "B" in your own experience? Just how much does it tell you about your progress?

2. Discuss the following quotation. "Whatever exists at all, exists in some amount. Whatever exists in some amount can be measured."

3. Give examples of cases in which a person's test performance did not give an exact measure of his learning achievement.

4. In what practical ways can a teacher's examinations be made more valid and reliable?

5. It has been said that percentage marks as used by teachers are not mathematical, and that they stand for neither quantity nor measured relationships. Discuss this statement.

6. What is meant by saying that the letter marks or grades have become ends?

7. Discuss the merits of a system which uses no comparative marks but merely points out to pupils and parents the strong and weak points in the learning behavior of pupils.

8. To what extent is verbalism evident in the schools of today? Is it more prevalent in the elementary school than in the higher schools?

9. Should the examination function be separated from the teaching function in our schools? That is, should there be a special board or committee to administer all examinations and relieve teachers of this function?

10. How accurately can you estimate personality? What traits or other manifestations influence you most in forming your judgment?

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CHAPTER X

TEACHING AS GUIDANCE

PURPOSE OF THIS CHAPTER

Guidance as a classroom problem. It is not within the scope of this book to discuss the general problems of guidance which concern administrators and supervisors of schools. Recent years have witnessed the establishment of vast systems of personnel administration as functions separate and distinct from the administration of academic and professional curricula. These functions have been administered by various types of organization, such as guidance bureaus, counselors, a part-time personnel director, a personnel office, a personnel committee, or even a personnel division in larger institutions. Not only would a separate volume be required to treat of these broad aspects of personnel work, but it seems unwise to include such problems in a work on principles of teaching. This chapter, therefore, will deal with that aspect of guidance which can and should be done by every classroom teacher as an integral part of efficient teaching.

Topics included. In order to confine the discussion to the limits described above, four aspects of teaching as guidance will be considered in order. (1) The necessity of guidance; (2) the threefold nature of guidance; (3) guidance inherent in good teaching; and (4) relative emphasis in guidance.

For the broader aspects of guidance as an institutional problem, the reader should consult the excellent books available on this subject.

THE NECESSITY FOR GUIDANCE

The demands of industry. In a society under the simple handicraft system many opportunities were afforded in the home to prepare for a trade and at the same time acquire a considerable general education. Under such conditions children could see the master workmen actually at work, engaged in cabinet-making, weaving, making shoes, or following some other occupation. Moreover, the apprenticeship system not only offered these advantages but provided also a limited supervision and guidance of the apprentice.

Under modern industrial conditions the home ceases to be an industrial unit. Industry tends to be extremely specialized and carried on in plants isolated from the home and little observed by the general public. Rural children have less opportunity than urban children to secure vocational information or discover their capabilities in this respect. Industry has removed from the home spinning, weaving, the manufacture of clothing and shoes, the making of furniture, baking, laundry, and many other activities once performed in full in the average home.

But the removal of the home industries is not the most serious concern. The enforced absence from home of the father and often the mother has deprived the children of much of the personal guidance afforded under the simpler system. Modern industrial conditions make it difficult to operate the apprenticeship system, and the general result is neglect and confusion for the younger generation.

Increased functions of the school. The function of the school is a residual one—that is, it undertakes to supply the education and training which cannot be received from the other agencies of society. Industrial changes have, therefore, thrust upon the schools certain additional obligations which cannot be escaped. Each decade these obligations seem to increase as the school assumes responsibility for imparting vocational information, teaching domestic arts, wood work, agriculture, industrial arts, elements of music, personal hygiene, morals, citizenship, and in some cases even religion. Furthermore, the specialized character of present industrial labor necessitates this institutionalized instruction, at least the basic part of it. It is not yet clear, however, to what extent the schools can assume these ever-increasing obligations. At any rate, the public looks to the schools for some kind of guidance in the rapidly changing economic order.

Universal education. Careful estimates indicate that in 1939 there are about 31 million people of the United States enrolled in schools and colleges—approximately one fourth of the total population. This multitude of learners constitutes a mass enterprise of democracy probably without parallel in all history. Actually about 70 per cent of American youth of secondary school age are attending school, as compared with about 10 per cent in London, England, as a typical situation in Europe. Following the precedent set by Massachusetts in its compulsory school attendance law of 1852, each state of the union has enacted legislation requiring attendance at school prior to a given age level or educational status.

The outcome of this gigantic movement towards an en-

lightened democracy has been a public school system filled with learners of all degrees of native capacity and interests. Consequently the colleges and universities have been flooded with masses of young people, most of whom are not interested in becoming educated. They seek rather certain types of skills or useful information which are calculated to help them participate with least friction in the modern economic struggle. These people, whose activities have been referred to as a "barbarian invasion," not only need guidance towards selected goals, but they need guidance in selecting goals or life purposes. Surely the classroom teacher is challenged today in a manner unknown in the days of highly selective school attendance.

Increased occupational demands. The age of infancy or dependence upon parents is gradually increasing. The average age of college entrants is now at least two years higher than it was a century ago. People are entering the higher professions from five to ten years later than they did a century ago. In all occupations there is a tendency to increase the pre-service training, not only in the technical aspects, but in the academic foundation as well. For example, the minimum time requirements for teachers have risen from one to four years beyond high school within a single generation. The new types of occupations and the new demands made upon the older professions make counseling and guidance necessary in the classrooms of today. The problems of guidance are by no means easy to solve, because educators themselves are not clear as to what program should be offered to each segment of this heterogeneous school population.

The problem of mental health. It has been said that the

physical body which is not at ease is "dis-eased." In like manner a learner may be diseased or maladjusted mentally. When situations arise for which there is no means of making a satisfactory adjustment, the organism is thrown out of balance and an unfavorable emotional reaction follows. Whether the troublesome situations be economic, sexual, or religious, the resulting disturbance is not conducive to mental health. This condition may lead to worry, self-pity, an inferiority complex, wild day-dreaming, or even morbid brooding over life problems.

People of the western world under current social and economic conditions have no time or place for the long hours of quiet and peaceful meditation characteristic of older civilizations in the east. This nervous strain, further aggravated by artificial life in urban centers, contributes to mental diseases having fatal consequences. Apparently adults are affected most, but actually children may under such conditions develop attitudes and habits which will wreck them in adult life. Unfortunately many of these mental disturbances are concealed from parents and teachers by the process of introversion or fighting the battles under cover. Much money has been spent and much progress made in caring for the physical bodies of children of public school age, but not so much attention has been given to promote stability and health in those deeper springs of action centered in the emotional life. Sports and other recreations divert attention to pleasant matters, but these are not fundamental cures.

THE THREEFOLD NATURE OF GUIDANCE

From the preceding paragraphs it may be inferred that there are at least three phases of the guidance problem for

teachers. These aspects will be explained briefly, in so far as they concern the classroom teacher.

Educational guidance. The fundamental task of each learner is to become educated; to attain such maturity intellectually, emotionally, morally, and socially as will enable him to live most completely. Quite apart from any vocational or professional aspirations, the learner must acquire the culture of the race; he must learn how to live as well as learn how to make a living. He must become not only an informed person, but one who can think, and one who is sane and responsible. The task of the teacher in the field of general education is to assist as far as possible in the processes just described.

If educational institutions are at all justifiable, it seems that their justification lies chiefly in the fact that young people, boys and girls, are inexperienced and need the help and counsel of those who are more mature and have seen more of life. Any one who travels along a new road should not spurn the advice and instruction of those who know the way. It will be recalled that the elective system and other attempts to leave the matter of general education to the choice of the learners have not been very successful. The increasing immaturity of youth, or the lengthened period of dependency, makes it imperative that more systematic guidance be provided in the schools in the purely academic and cultural fields.

Occupational guidance. The teacher of the elementary school is not particularly concerned with vocational guidance. But at some level of the secondary school many pupils of necessity sacrifice their education and prepare themselves for a vocation. The first need of this group is vocational

information. They need to know the nature of the various fields of labor and service and the demands for workers in these fields. Classroom teachers can supply much useful information regarding the various occupations in connection with regular instruction in elementary science, geography, history, and other social sciences. If the teachers fail in this task, the school is obligated to establish an office or bureau to administer a general guidance program.

A second requirement is that the learner know his own fitness or limitations with respect to a contemplated occupation. It is perhaps in this connection that the teacher can be of greatest service in vocational guidance. The teacher is in position to observe the depth and variety of interests manifested, and at the same time the learner's capacity and special abilities become known. The efficient teacher will keep himself informed about the major demands of the various occupations as far as capacity and general education are concerned.

Personal guidance. Confronting every learner will be found certain problems which are neither academic nor vocational. These require what we shall call personal guidance. In general there will be problems of acquiring social usages, overcoming tendencies towards extreme introversion, eliminating undesirable mannerisms, problems of control of moods and temperament, problems of sex, religion, neurotic tendencies, and innumerable other conditions which may determine success or failure in any occupation.

Since it is well known that certain types of mental disorder are rooted deeply in early experiences of childhood, it is most important that these be detected and that a program of wholesome treatment be inaugurated at the earliest possible

moment. Assuming that a satisfactory personal adjustment to the problems of life is a desirable objective, what means may be employed to attain this end? Many of the problems of mental disorder center around the concept of conflict. The ordinary individual is subject to deep-seated, impelling tendencies from within and restraining sanctions and compelling conventionalities from without. Hence mental conflict ensues unless some integrated pattern of action can be found. Mental hygiene seeks a rational program for resolving such conflicts.

How may classroom teaching contribute to the mental health of the learners? No general formula can be prescribed, since the problems are many and varied. The cause of the disorder must first be determined. Suppose a person has an organic inferiority or physical handicap. This one may develop such an inferiority complex as to spoil whatever future may be in store. The chief remedy here is to find something which this one can learn to do exceptionally well, no matter how seemingly insignificant it may actually be, and the resulting confidence will often relieve the conflict. If the conflict is between natural desires and the demands of the social mores, it may be that the person lacks social orientation and the fundamental concepts of social or group life. It must be made clear that real freedom and happiness are to be found and maintained in cooperation with others through individual sacrifice. If home conditions are the cause of mental irregularity, the teacher can help by at least manifesting sympathy and understanding, although little may be done to relieve the home conditions. Whatever may be the nature of the maladjustment, the school cannot escape its responsibility for expert guidance in mental hy-

giene any more than it can neglect to teach the academic subjects. The need for this form of guidance has been increased along with specialization of instruction and extensive departmentalization. Under these conditions few teachers feel responsible for the whole child and his many personal problems. A teacher cannot be called efficient who has no consciousness of these problems.

GUIDANCE INHERENT IN GOOD TEACHING

Good teaching *is* guidance; it is essentially the leadership of immature youth by those who are mature and educated. Teachers do not educate people; at best they merely guide in the process. Let us examine some of the crucial aspects of this guidance.

Understanding the pupil. It is important in the first place to understand how the learner has become what he is. This question involves a consideration of hereditary and environmental factors as they have affected development. The individual is an organism, a physiological unit. Biological heredity has provided this structure with its vast possibilities of growth and adaptation. But this organism is capable not only of structural adaptation but psychological adaptation as well. The extent and character of the psychological adaptations are determined by environmental conditions. To the biological organism must be added the tools or instruments vital to mental manipulation on the abstract level. These have been explained previously as reading, writing, language, and precise number concepts. These extend the scope of experience and widen the range of human possibility.

The second consideration is the present status of the learner. What is the state of his mental health? What mo-

tives or ambitions prompt his endeavors? What significant traits of personality does he possess? Whatever may have been a person's inheritance and development to date, it is quite clear that the strain of circumstances in society may produce emotional disturbances of major consequence in teaching. The teacher must, therefore, continually study contemporary society as an important clue to the mental condition of the learners.

Providing a better environment. The most significant fact about an educational institution is that it provides a better environment for youth than any chance environment can afford. The school environment is selected and controlled, graduated to the needs of the learner, enriched in experiences, and purged of the impurities of the ordinary chance environment. Since education is a form of growth, conditions must be made conducive to this growth, just as in the case of the cultivation of plant life. It scarcely needs to be mentioned that the teacher is the most significant part of the school environment. Learning may not be expected to rise above this important source of knowledge and leadership.

Guiding study processes. One of the commonest errors made by teachers is to assume that pupils know how to study without having been taught economical methods. Since a discussion of the types of study is found elsewhere in this book, it remains merely to point out here that pupils need guidance in studying as well as in choosing a vocation. They need to know how to study as well as what to study.

Knowing how to study involves understanding the different types of learning and the corresponding outcomes or learning products. While knowledge of these types is funda-

mental, it is by no means sufficient. Original nature with its basic urges, needs, drives, and curiosity may be a potent source of motivation, but these do not furnish the most economical means of procedure in reaching the desired goals. Certainly with reference to the skills, the methods which the child adopts without instruction and guidance are generally not the most economical. Typewriting and memorizing are notable examples. The student of science must acquire definite techniques of study which are not "instinctive" but which have been acquired by many generations of scientists. These must be taught and learned, not left for the individual to learn by chance. Likewise in every school subject the learner must understand exactly what activities are implied in the word "study." The public school teacher is an expert employed by the public to furnish this technical guidance.

Teaching self-appraisal techniques. The learner must develop self-dependence. He must learn to diagnose his own difficulties, so that he may better understand his abilities and limitations. The best assistance a teacher can give a pupil is to teach him to help himself. Many techniques of self-appraisal are known. The method of psychoanalysis is helpful in understanding mental disorders, but such technical service is not always available. It requires extensive, expert training to employ effectively the procedures necessary to explore and bring to consciousness the factors affecting one's behavior. Simpler means are available. The learner can be taught to analyze his errors with a view to learning what types of errors are common and what causes them. The method of comparison of one's performances with those of people who are more successful is an important technique. It is not enough to observe and try to imitate the examples

of others; one must know the difference between one's own performance and the desired performances. The phonographic recording of one's speech is a successful device for studying and correcting vocal defects. Many varieties of self-rating scales are on the market today whereby a person may obtain a reasonably accurate estimate of his attainments. The self-administering tests of intelligence and general mental ability are useful in evaluating a person's fitness to engage in certain pursuits or occupations which call for highly rationalized performances. Modern school practice recognizes the advantage of apprising the student of these and other similar techniques as early as possible in his educational career.

Teacher-evaluation of the learner and the learning. Assuming that the teacher is an expert, it follows that his appraisal of the learner's behavior is important. He is not only impartial in judgment but objective in point of view. Furthermore, the good teacher has a tactful way of informing the learner of his standing from time to time. Having thus discovered his bearings the learner can cooperate with the teacher in formulating a course of action for the immediate future till the next inventory can be taken. In all of the particulars which have been mentioned in this connection, let it be emphasized that the teacher functions as a guide, not as a rear guard.

RELATIVE EMPHASIS IN GUIDANCE

It has been said that guidance is required at a time of crisis. It may be assumed that many crises of one kind or another are experienced in school life. Good teaching anticipates the times of crisis as they appear ordinarily at the

different levels of the school system, so that proper emphasis may be given to the three aspects of guidance.

On the elementary school level. Under present regulation of child labor and school attendance by statutory law, the question of vocational guidance is practically negligible in the elementary grades. The great concern at this level is educational and personal guidance. Certainly there exists a major crisis when the child enters the first grade and attempts to fashion a new way of life. Reading, writing, and numbers must be mastered. New behavior patterns must be formed to fulfill the demands of social life. Then the child must have some acquaintance with the world in which he lives. Hence the major emphasis in guidance is what we have termed educational. At no time is expert guidance more in demand than at the time when new skills and habits are being formed and new ideals and attitudes established. Surely the first three grades merit the best teaching service available. At this stage educational handicaps become apparent, requiring all of the resources of the best teacher.

Personal guidance as previously defined is perhaps of secondary importance at this period. It is true that children of the early grades experience psychological disturbances of considerable consequence. Unwholesome attitudes, injurious habits, and chronic fear complexes may develop unless the teacher provides suitable preventive measures. These cases are exceptional, however, and need cause no particular concern if instruction is efficient and adequate provision is made for health and recreation.

On the early secondary level. At the early adolescent period, or junior high school age, additional crises arise requiring guidance. Educational guidance must be continued

with considerable emphasis. The program of studies at this level allows freedom to explore the world of culture and offers opportunity to work with more independence and individual responsibility. The customary specialization of the teachers at this level adds new problems of guidance to prevent the pupil from abusing his new liberties. Guidance is especially needed in choosing values and in avoiding the spurious and trivial, because the highest values are not usually the ones most conspicuously advertised in the land.

At the junior high school level some attention is given to vocational guidance. For most students the form of this guidance will be a provision for *information* about the various occupations, so that aptitudes may be considered and a choice made later. At this age at which boys and girls are trying to "find themselves" the teacher must offer an unusual amount of help and sympathy. In connection with the social studies and the wide reading program, teachers can point out the rewards and hazards of various occupations, along with the demands which each occupation makes upon the individual. Permanent attitudes about occupations are being made at this age, and these immature and inexperienced young people need more counsel and guidance than they are willing to acknowledge. Apart from vocational information, only a few will need vocational guidance. Most of the junior high school population are required to continue in school beyond the junior high school, and consequently they can postpone occupational choices.

Undoubtedly the personal aspect of guidance must be stressed in early adolescence. At this age children undergo changes which usher them into adult life. There is still a question as to what extent sex information should be given

in the classroom. Perhaps most teachers are none too well informed themselves on this question. At any rate it should be given at home or by others competent to do so. The rapid physical growth and change at this period are accompanied by intellectual and emotional upheavals which deserve close observation. The youth are thinking deeply about themselves and about the affairs of life. They have problems which to them are of paramount importance. The problems may actually be anything from temporary love affairs to permanent religious choice. Teachers and other adults must be sincere and genuine, because no quackery will be tolerated at this age when the whole world is being rapidly scanned and evaluated by these adolescents. Sound advice, firm treatment, wholesome recreation, and worthy example are the prime requisites to successful guidance at this level.

On the later secondary level. In the senior high school, vocational *choice* becomes more important. Such a choice is more urgent for those who are to terminate their school careers at the end of the senior high school. These will select a curriculum which is designed to prepare them for immediate employment in some vocation. Choice is likewise important for those who are to pursue their studies farther and eventually enter the learned professions such as law, medicine, and teaching. Since success in these professions is related to one's success in the academic fields of general education, teachers are in position to furnish valuable aid and counsel. Moreover, an early choice has the advantage of solving the problem of sequence of studies in the senior high school, and also in the junior college where the pre-professional work is done.

Guidance with respect to personal problems continues to

be important at this level, but the problems are slightly different from those of early adolescence. After age fifteen the outlook begins to be more social rather than introspective; self-consciousness soon turns to social consciousness. Social adjustments must be made. The world and the problems of the world are taken more seriously. The problem of a life partner is by no means an insignificant matter at this time. In this connection there is an increasing demand in the schools for regular instruction and counsel in such special courses as eugenics, sex hygiene, and marriage. Not all of the problems, however, are of a social character. Some pertain to economics and personal religion. Doubtless one of the greatest needs is a technique for teaching young people the nature of wealth and how to become economically independent. Unfortunately our schools leave the impression upon youth that they are to begin with a good salary or income rather than teach them how to begin at the bottom and make their way in the world.

The purely educational phase of guidance in the later secondary period requires emphasis chiefly because of the elective system of studies. The original purpose of the elective system was to permit the selection of needed courses, but this purpose has not always been followed. Too often the system has been used to avoid certain courses which were purported to be difficult. By this strategy a student could go through the secondary school with a minimum of resistance. One who has followed such a method may at a later date discover a lack of the fundamental understandings required for the occupation which has been selected. Immature youths with limited foresights are not to be blamed for this type of mistake; they need adequate educational



guidance. Although a separate guidance office or bureau may be provided, these functions cannot be isolated from the classroom. This responsibility makes it necessary that teachers be capable of grasping the problems of the entire educational system, and that they think not merely in terms of subject matter but in terms of the individual as the final product of the school.

SUMMARY

The main arguments in support of the proposition that teaching is a form of guidance are summarized in brief form below.

1. Recent emphasis upon the problems of guidance has resulted from various conditions.

- (a) Under modern industrial conditions many functions once performed in the home have become technical and specialized.
- (b) The assumption of additional functions by the school has increased its problems both in quality and variety.
- (c) Compulsory school attendance of people of all classes and capacities has produced problems unknown under the selective system.
- (d) Occupations themselves have increased their general requirements and specialized functions.
- (e) Modern conditions have rendered more acute the problem of mental health and the accompanying personal disorders.

2. Guidance as a teaching function involves at least three aspects.

- (a) Educational guidance pertains to the field of general

education in which the learner is developing his full maturity and personality.

- (b) Occupational guidance aids the learner in discovering his aptitudes and in choosing and following a suitable vocation or profession.
- (c) Personal guidance is concerned with those incidental psychological problems which are not strictly educational or occupational.

3. Guidance is inherent in good teaching. It may be said that teaching *is* guidance.

- (a) The teacher must understand the learner.
- (b) Teaching involves the provision of a suitable environment.
- (c) The study processes must be guided.
- (d) The learner must acquire techniques of self-appraisal.
- (e) Guidance requires expert appraisal of the learner by the guide or teacher.

4. Emphasis on the three aspects of guidance is relative for the different levels of the school system.

- (a) Educational guidance is a constant care, but it perhaps requires major emphasis at the elementary level.
- (b) Occupational guidance is of little concern in the elementary school but requires increased emphasis in the secondary school.
- (c) Personal guidance is important at all levels but particularly so during the first three grades and at the age of adolescence.

EXERCISES

1. Enumerate the crises in your own life at which you needed guidance but failed to get it.

2. How do you harmonize the "progressive school" movement with the present emphasis upon guidance?

3. What functions performed in the home a century ago are now obligations of the public school? What guidance problems have resulted?

4. Show how the coming of compulsory school attendance laws is historically related to the problem of individual differences and guidance?

5. Compare the length of time required now to prepare for the learned professions. Why has the time increased during recent generations?

6. How is the problem of guidance related to the general problem of educational objectives?

7. Discuss the general proposition that the function of the public school is the guidance of the youth of the land.

8. How early in life should occupational choices be made? Would the age vary with different occupations?

9. If you have chosen your occupation, list the factors and conditions which influenced your choice.

10. List what you consider to be the major problems of guidance which arise in dealing with a group of children just entering the first grade.

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CHAPTER XI

THE TEACHER'S PHILOSOPHY OF EDUCATION

PERHAPS every person has a philosophy of life, a point of view, a way of evaluating the fundamental issues of life. Such a system of values enables the individual to give direction and purpose to his activities and to unify his experiences so as to give them meaning. In like manner the teacher needs a sound philosophy of education. This helps one to become more alert, progressive, confident, and able to evaluate educational theories and practices. On the following pages certain points of view will be presented and evaluated with the hope that the beginning teacher may be encouraged to acquire and formulate his own philosophy of education.

AMERICAN BELIEFS ABOUT EDUCATION

A cross-section view of American beliefs and traditions regarding education will serve as a social background for the study of a philosophy of education. Since the public school is a social enterprise designed to serve the purposes of society, the teacher's philosophy must take account of those social groups and forces which have made the school possible.

Democracy and free public education. Beginning in the second quarter of the nineteenth century the people of the

United States became convinced that public education is essential to the existence of a democracy. If citizens were to vote and assume certain obligations of government, they must be intelligent. Since citizens of both sexes and of all races are entitled to vote under the constitution, it follows that the privileges of education should be extended to all. A most casual observer of American life will be convinced that the people believe in free education for all. Twenty-five per cent of our entire population are continually in school. In general, the greatest single expenditure made by local political divisions is for education. In practically every city, village, or hamlet it is the school building which tends to dominate the entire architectural pattern. We have various clubs, churches, and societies, but the public school is about the only enterprise in which all can meet with a common purpose and with united effort. Even the most inveterate political prejudices seem to weaken when the people unite to promote public education. Thus the school building often becomes the chief social center, especially in the smaller communities. Not only are the public schools free from tuition charges, but free textbooks are furnished in many parts of the country. The fundamental belief is that this huge expenditure for public education is justified as a means of perpetuating our democratic society.

Compulsory education. The nineteenth century witnessed the coming of compulsory school attendance laws in the United States. Although there is no federal system of education, every state and the District of Columbia have laws requiring children to be educated, or at least to attend school during certain age limits. The choice as to whether a child shall be educated is no longer left to the child or to parents.

It is assumed that the child is too immature to decide this matter, and that certain parents might neglect the education of their children if permitted to do so.

Coeducation of the sexes. One of the most striking departures from European practice is our insistence upon the education of boys and girls or men and women in the same classes in secondary and higher education. In 1919 the nineteenth amendment to the federal constitution permitted women to vote on an equality with men. Such an action is entirely logical in a democratic society. Admitting women to the right of suffrage involves a further responsibility for providing them with the means of education. But the political question is not the only consideration. Long before the ballot was extended to them, American women were being educated in our institutions of higher learning, and boys and girls were attending the public schools together. It is argued that boys and girls, men and women, who are to live and work together in home, church, business, and society should be educated together for the highest efficiency in these relationships.

Rights of private schools. The compulsory school attendance laws do not require that a child attend a public school. The general intent of the laws is that the child should be educated, and therefore the matter of choice between public and private, or church school, is left with the parents and their children. Private and church schools, our oldest institutions, have been guaranteed a place in our society by various supreme court decisions. The public school is generally forbidden to teach the Bible or any religious doctrines, under the fundamental assumption that the churches and the state should be separated. But in our best schools there exists the

wholesome spirit of Christianity which all sects alike respect. This arrangement leaves to the homes, the churches, and the church schools the task of teaching the distinctive doctrines of the respective denominations in the manner each sect desires.

The standard of success. When it comes to what we actually label success in life, our philosophy as a nation is none too complimentary to us. Our ideals and our practices are often at variance. It is easy to teach that the successful person is the one who plays the game well or performs according to his native capacities, but such a person is not actually acclaimed a success unless there is some material or visible accomplishment of note. Since we have money as a standard of exchange value, there is a tendency to apply this measure to all values. The successful business man is the one who makes money. Success is accorded to the one who invents something of material value, wins a prize fight, flies over the ocean as a pioneer, or organizes a great business corporation. Under this philosophy, millions who can never hope to do such things easily get the impression that they can never be successful. So ingrained is this belief that our schools tend to promote an unwarranted individualism by encouraging children to forge ahead to "success" by personal advancement on a purely competitive basis. Each day's schooling has even been evaluated in terms of dollars and cents!

Having surveyed some of the typical beliefs underlying the American philosophy of education, let us now examine some aspects of a teacher's philosophy as actually applied in the classroom. The following discussion will center about four topics: (1) On the meaning of education; (2) On the

nature of the child; (3) On the nature of society and of freedom; and (4) On the organization of the curriculum.

ON THE MEANING OF EDUCATION

The concept of education as quantity. In several instances and particularly in the chapter on the appraisal of learning, references have been made to the nature of education as distinguished from mere quantity of performance. The reader is requested to review those sections in connection with this discussion. In general it was pointed out that education is more than the mere ability to dispense knowledge or perform certain skills. Certain kinds of training and a form of intelligence are observable even on the animal level, but education is more than an aggregation of the learnings acquired by use of the lower mental processes, such as sensation, perception, and memory. There is a rather widespread notion that education is determined by the number of changes produced in the nervous system directly by stimulation, without regard for the necessity of the functioning of an organ to integrate these learnings. Thus the educated man is differentiated from the uneducated by a sheer quantity of relatively discrete learnings.

A theory of this kind has educational implications of utmost importance. In the first place it encourages a devotion to mere acquisition of discrete and unorganized facts. This is an easy pitfall in such subjects as history and arithmetic. Facts are piled upon facts in history, and the learner is often expected to repeat from memory a selected quantity of these as evidence of learning. The more the facts the greater the success, as the theory goes. In this way history is made a drill subject and a good example of the informa-

tion fallacy in education. In arithmetic the procedure becomes a drill process on the assumption that a quantity of nervous connections or associations is desirable. Such a theory neglects the higher mental processes, and is, therefore, inadequate as an explanation of education.

Education and the higher mental processes. When proper attention is given to the higher mental processes a large quantity of memory work, repetition, and drill will be found unnecessary. Merely learning *what* to do is a lower mental process; understanding *why* a thing is done by reference to a system or principle is a higher form of learning. No mere addition or multiplication of facts or learnings can ever equal abstract or conceptual thinking, classification, drawing inferences, or the organization and integration of experiences. These higher processes rearrange and reconstruct experiences into systems of thought. Number work is difficult for children, because at an early age they are called upon to employ higher mental processes. Learning numbers is not the same as learning language, because the latter is largely associational learning on an arbitrary basis. Words can be invented or discarded at pleasure. Numbers are elements in an abstract system. The number four, for example, is not the name of an object, but rather a figure in the background of the whole number *system* which gives the number whatever meaning it has. In fact the four fundamental operations in arithmetic are essentially processes of rearranging numbers in a system. If arithmetic is ever to become for the learner a system of precise thinking, as it should, then it must be grasped on a rational basis and not as a mass of memorizations.

Growth in the cultivation of the higher processes requires

stimulation; learners must be encouraged to become rational. The mere acquisition of knowledge is not education. Pupils should be taught to think and to organize and systematize their experiences. Trying to induce pupils to solve a large quantity of problems by reference to rules or formulas held in memory is discouraging the use of those higher processes which truly belong to higher education. And so it is in all of the other fields of learning; eagerness to make a quantitative showing results in a suppression of the very activities which characterize real education. Although education rests upon the mastery of certain skills and memorizations, it is by no means identical with these. Intelligent behavior is characteristic both of man and animals, but rational behavior is peculiar to man and makes his education possible.

ON THE NATURE OF THE CHILD

The Calvinistic view. The doctrine that every child is born bad or sinful has been ascribed to John Calvin (1509-1564), the reformer. The doctrine is, of course, much older than Calvin, but he gave to it a strange application and extreme emphasis. Certain followers of Calvin demanded the "baptism" of infants as a means of salvation from eternal damnation to which they would be exposed in death. The doctrine is a curious variation of the doctrine of total depravity, which is as old as the Bible itself. But the two are not the same. Total depravity means that a child is born under a curse placed upon the human race as a result of the sin of Adam. The terms *good* and *bad* do not apply to infants under this doctrine, but it means that they, and all others for that matter, are in and of themselves totally incapable of becoming righteous. The doctrine applies to

religion, and not to morals. The Calvinists seemed to confuse religion and morals, thus making the infant evil or bad in a moral sense. The terms good and bad in a moral sense apply to actions in connection with moral situations where deliberate choice is involved.

The evil consequences of Calvin's doctrine in education are apparent. As practiced by some of his stern followers, the child's nature was suppressed and his personality destroyed. He must not exercise his imagination or his emotional nature. Education must be exactly the opposite of all the child's impulses, desires, or inclinations, because all of these were considered evil. The distasteful task was the correct thing to require, because anything contrary to nature was right. The child's nature being thus stifled, the logical procedure was to prescribe a curriculum based solely upon adult needs and whims. The early New England schools afford an excellent illustration of this type of formalism, which persisted till late in the nineteenth century. Physical discipline had to be severe, as little or no attention was given to the needs and interests of the children in the schoolroom.

Rousseau's view. A point of view quite the contrary of Calvinism was that of Jean Jacques Rousseau (1712-1778). This French philosopher was the great champion of naturalism in education. The first sentence in his famous work on education, *Emile* (1762), states his philosophy as follows:

Everything is good as it comes from the hands of the Author of nature; everything degenerates in the hands of man.

Assuming that the child is born good, Rousseau outlines a system of education which follows the order of nature.

Much importance is attached to the child's impulses, desires, imagination, and in brief all of his native inclinations. The traditional teacher is replaced by a tutor who stands by as a sort of referee or first-aid station as the child grapples with the forces of nature in an attempt to gain firsthand experiences and thereby become educated.

The model boy Emile is not to be polluted or prejudiced by acquiring conventional ideas of right and wrong, of God or of religion, or of the nature of the world. He represents a complete revolt against the customs, beliefs, traditions, and practices of his day. Advocating a complete return to nature, Rousseau considered education to be a process of natural unfolding of innate forces. This procedure was supposed to supply not only the intellectual but the moral training of the child as well, allowing the child to learn moral lessons from the consequences of his own acts. Even Emile's religion was to be a natural one, evolved from experience if and when he felt the need for it.

This mid-eighteenth century radicalism was profitable in that day as a means of combatting the distorted notions regarding childhood. Like many other extreme doctrines, it has continued to have ardent supporters who seem not to understand the limitations of the doctrine in a social order. The ability of people to live together in a cooperative society is one of the higher arts, acquired by costly and painful racial experience. It is not a natural outcome of the native impulses of individualistic living. Rousseau's theory rests upon the instinct hypothesis and ignores the contribution of society in the education of the individual.

A variation of Rousseau's doctrine is illustrated in the so-called "child-centered" schools. The very expression is

misleading. This type of philosophy is good in so far as it recognizes the importance of understanding child nature and of arranging activities appropriate to the child's nature and level of maturity. Its chief weakness lies in the assumption that there is a biological demand for education, a position which cannot be defended. The doctrine is off-center; it would be better to say "society-centered" schools, because the curriculum is social in origin and designed to prepare for life in a society. The public school teacher is not a private counsel retained to argue the case for the individual; he is a chosen representative of society to promote the common good. This is done of course by educating the individual, but the child is not the center of attention. The wildest jungle is a fine example of an individual-centered order. Nothing is more absurd than to contend that an unguided child should be allowed to study only what he desires to study and to do only what he desires to do.

The most valuable part of Rousseau's doctrine is the emphasis on the psychological order of the learning processes. Things experienced were to precede words and other symbolism. The order was experience with things, ideas about these things, then words or symbols to express these ideas. This is quite the reverse of the procedure customary in Rousseau's day. At that time words received so much emphasis that the practice was known as verbalism. Rousseau's radicalism made a complete swing away from this formalism and initiated in education the principles of naturalistic philosophy.

Locke's view. The philosophy of John Locke (1632-1704) has been reviewed in another connection; nevertheless, it should be pointed out here that he considered the child to

be born neither good nor bad, but neutral and with a blank mind (*tabula rasa*). He says: *

. . . I think I may say, that of all the men we meet with, nine parts of ten are what they are, good or evil, useful or not, by their education. 'Tis that which makes the great difference in mankind.

The child becomes good or bad, wise or unwise, as experience and training write the record upon the tablet. This emphasis upon the importance of experience or environment is directly in opposition to the hereditary doctrine of natural unfolding as advocated by Rousseau. The one view tended to make education a drawing-out or unfolding process, while the other assumed it to be a filling or in-take process.

The child as an organism. Although there is something commendable about each of the three philosophies just reviewed, they all tend to center about the problem of the status of the mind, an approach so characteristic of the older psychologies. A more hopeful tendency is to think of the child as an organism, or organized unity. For the benefit of those who argue about the unity or duality of man, it may be stated that he is both. There is no contradiction in assuming him to be two in one or one in two. Inability to explain this double-aspect monism is not evidence against its existence. At any rate, if the individual is to be explained he must be treated in terms of his unity, not his units in isolation.

It is customary to speak of the nervous system, the circulatory system, the genetic system, or the muscular system as if these were independent systems. For this physiological analysis suitable terminology has been selected. The psychologist likewise must treat of the individual as a unit, an

* *Some Thoughts Concerning Education*, p. 1.

organism, for which a suitable terminology has just begun to develop. The child as an organism possesses certain characteristics which must be considered. In the first place he is impressionable; that is, capable of receiving stimulation and retaining effects of the experience. This appropriation of experience is not a stamping-in process on the brain, but rather a form of growth of the organism. The exact nature of this growth is not known, but in all probability it is much more than a mere change in the nervous system. The child is active, dynamic. He does not merely react like a rubber ball, he acts; he plans; he surmounts obstacles; he often chooses the painful path to reach a coveted goal; he reflects; he goes beyond mere organic needs and solves problems for pleasure; he appreciates the good, the true, the beautiful; he is more than a mere mechanism.

The child is capable of almost unlimited growth. There is evidence that certain phases of physical growth continue as long as life lasts. The intellectual phase of growth, which results from learning, may continue as long as life. There has been much contention as to the age at which mental maturity is attained. Some of the early enthusiasts for mental testing assumed that maturity is attained at about age sixteen or seventeen. This doctrine rests upon a strong hereditary bias—the assumption being that intelligence is merely a matter of heredity plus maturation. It takes no account of the importance of the higher intellectual tools in education. Abundance of evidence is furnished in the experiments of Professor E. L. Thorndike and others that intellectual growth continues till late in life. He says: *

* E. L. Thorndike, et al., *Adult Learning*. New York: The Macmillan Co., 1928, p. 166.

If we had a hundred boys of sixteen and a hundred men of thirty-six study algebra or French or history or civics for a year and had a record of the thinking of each individual in doing so, I very much doubt whether we could do much better than guess at which was young thinking and which was old thinking, except for references to special adult experiences or signs of special interests.

ON THE NATURE OF SOCIETY AND OF FREEDOM

Pioneer methods limited. The teacher's conception of the structure and function of social groups will affect his ultimate success in teaching. The present stress upon social science is evidence of the demand for social intelligence and a sound social philosophy. Under pioneer conditions the struggle was largely one between man and nature. He thought of how to secure food, clothing, and shelter; how to combat weather conditions; and how to become self-sufficient and independent. In these things lay his freedom and security. He was his own kingdom and his sole ruler.

With some increase of population these same conditions continued to apply to small community groups. People were banded together into small societies, each maintaining its independence and self-sufficiency. Each group produced what it used and used what it produced. Trade, commerce, and specialization were scarcely known. These communities became local political and educational units with complete autonomy in government. Under these conditions freedom consisted of noninterference from any outside force. This conception of society, still in evidence in certain isolated mountain sections, served well during the infancy of the nation. But when America became of age, a new philosophy was needed.

Social interdependence. The importance of certain means of social cooperation is generally recognized. The need for a common language, for example, in promoting the common good is readily acknowledged. Much time, energy, and money are expended annually, and even under compulsion, to perpetuate our system of writing, numbers, and language. Vast systems of communication, such as radio, telephone, and the press, are deemed indispensable in our society. But in matters involving wealth, property rights, government, and social security, progress has not been so conspicuous. Because of our slowness to recognize the principle of social interdependence, the private and monopolistic interests, using pioneer methods, seized vast natural resources under the guise of individual rights. The inevitable result was a tremendous loss to the common good and extreme inequality of opportunity. Where individualism is extreme, government is regarded as an evil to be avoided. In civilized groups, government is a means of social security; it insures protection, opportunity, and freedom. The assumption that the possessor of property is necessarily the owner, belongs to savagery and not to civilization. Much of our fundamental law of today unfortunately applies only to pioneers or to the days of national infancy.

Under the industrial system and the attendant specialization, our social interdependence has become even more marked. Progress, as the term is applied, depends largely upon specialization, but at the same time people become more dependent one upon another. Probably no family now produces or manufactures all the goods necessary for its maintenance. In passing from the handicraft system, people learned to depend upon one another for goods and services

to such an extent that any disturbance in the system is experienced by all. A sound social philosophy, therefore, must recognize that the welfare of the individual in a society is identical with that of the group. Individual and local autonomy are possible only in matters which are personal and local. To reconcile personal liberty and group welfare has been a problem of philosophy ever since the Grecian Golden Age. This problem can never be solved as long as the two are thought of and sought after as two separate goods. Individual greed, individual power, individual exploitation and advantage are not compatible with social welfare and freedom.

Social control. Individuals control their behavior only in a very restricted sense; self-control can never be absolute. Various forms of social pressure emanate from the groups to which a person belongs. Without an understanding of these types of social control it is not possible to give an explanation of human behavior. The teacher must seek to understand the social factors which operate in the mind of the learner; it is useless to try to ignore or to counteract them. A few of the more important controls will be considered briefly, beginning with the subject of statutory law.

It is a common and traditional practice to resort to rules, laws, or regulations as a means of control of individual behavior in civil society. The rights and privileges of individuals are defined and penalties prescribed for the law-breakers. Thus a group is controlled by a system of restraints. Although control through statutory law is apparently necessary, it operates largely as a result of fear of forces outside the individual. Control by law is at best only a low form of control. A person whose behavior is governed solely

by the demands of statutory law cannot lay much claim to the higher moral virtues. One must rise higher than law to reach the plane of equity, justice, and morality. To deal with children and parents who are accustomed to operate on a plane of legality is no small problem for the educator. Truly the problems of the school are the problems of society, and the two cannot be separated.

One of the most potent factors of social control is religion. By one's religion is meant one's conscious relationship to the Supreme Being and the consequent obligations to one's fellowmen. A person's behavior is tremendously affected by belief in the existence of God, who is all-wise, all-powerful, and ever-present, and who takes account of all that one does or thinks. Fear of the wrath of God restrains some people. But religion controls in another way than fear from without; it constrains us by love from within. This latter form of control is the stronger of the two. Some do right because of fear of punishment or because of strong social pressure. A genuinely religious man does works of righteousness through sheer enjoyment and through love and reverence for his God. In either case there is a powerful control exerted by the churches which still teach and practice the genuinely Christian principles. It should be remarked in this connection that the religious control has weakened as a result of certain widespread revolts against the teachings and authority of the Bible.

A most effective and economical means of social control is education. The school acts as a socializing agency by inducting youth into the customs, beliefs, traditions, and restraints necessary for group solidarity. The culture of the race is thereby preserved for future generations. The

strength of this control lies in the fact that it works from within, and not from outward force. This is accomplished by inducing the child to think in certain ways, to desire certain things, and to respect certain institutions. Moreover, the youth grow intellectually, becoming men and women who are capable of making right decisions and contributing to the common welfare.

Among other effective means of social control may be mentioned public opinion, custom, and fashion. Perhaps the most subtle of all controls is public opinion. Strictly speaking, public opinion is not so much the opinion *of* the public as it is opinion *for* the public. Certain groups of leaders having prestige and ready access to the public promote campaigns or advance ideas. The newspaper is perhaps the most effective means of crystallizing thought or molding sentiment on a public issue. This is especially noticeable during political campaigns. Much reliable information is brought to the public by press and radio, and of course much is withheld. As the campaign progresses the voters are swayed to and fro in accordance with their enlightenment and their prejudices. Finally it is said that they have made up their minds, or that public opinion has been formed. It would be discomfoting, perhaps, to make an accurate analysis of the amounts actually contributed by the individual voter and the pressure groups in this process of "making up one's mind."

Customs have been appropriately termed group habits. They are relatively uniform ways of doing things from one generation to another. Marriage customs and religious ceremonies furnish good examples. These practices change little from time to time unless they interfere with what the

group considers to be progress. Customs may be regarded as approved ways of doing things; ways which the group has found by experience to be best. Within this meaning may be included ways of the cultivating of soil, the building of houses, the serving of meals, or the caring for the dead.

While custom operates vertically from one generation to another, fashion operates horizontally in large cross sections of society. Two factors operate in fashion as regards clothing. One is the commercial. New goods sell more easily if the designers can make them sufficiently different to create the impression that all other clothing is out of date. Most people will try to discard perfectly good clothing if it is not in style. The second factor is a process of imitation and differentiation. Certain social leaders seek to be different from the masses, while the masses seek to imitate those who lead the fashion parade. Thus when a style is widely copied and worn, it becomes too common for the elite, and they must consequently make another differentiation. This process was more apparent under the handicraft system. With the rapid machine methods and better communication systems, there is quick duplication. Clothing is only one of the items affected by fashion. It is clearly evident in automobiles, furniture, houses, jewelry, and in countless other realms.

ON THE ORGANIZATION OF THE CURRICULUM

Many types of organization of the elementary curriculum have been advocated, but in the final analysis these are perhaps reducible to only two. They are the project system and the ordinary school subjects. Each has certain merits and

deficiencies which will be pointed out in the following paragraphs.

The project system. Many erroneously refer to the project as a method of teaching. It is neither a method of teaching nor of learning, since it involves no particular learning procedure but all types of learning activity. It should be considered a form of curriculum organization, because in any project practically all of the learning procedures are called forth; it comprehends the entire program of pupil-activity for the period of time. The main feature of the project is its emphasis upon large life enterprises conducted in a setting as nearly natural and lifelike as possible. School work is presented as a form of living, and hence motivation is easily accomplished.

Projects may be for the individual or for the group as a whole. In the group project all are enlisted and the work so organized as to call forth as much individual activity as is consistent with a common purpose. The individual project is better adapted to the upper grades and requires less supervision. It lacks the socializing effect so characteristic of the group project.

It is perhaps not a matter of whether to use the project, but when to use it. It is clearly a mistake to organize even the primary curriculum so as to include only a series of projects or so-called units. It is made clear elsewhere in this book that there are different types of learning calling for different treatment of curriculum content. It is extremely doubtful that the skills can ever be acquired economically in a project system. The skills and arbitrary associations require such close concentration and sustained individual effort that it is necessary to present them in a

different manner. But those curriculum objectives which are termed ideals, tastes, interests, attitudes, or appreciations may well be achieved in the large life enterprises, because such objectives have social implications and depend upon social stimulation. Cooperation is stressed, and group stimulation can be made to elicit the finest responses of which children are capable. Although much useful information is acquired, no doubt the information aspect of projects is overestimated. Children have curiosity to know things, but only those immediately useful will be retained. To make most of this knowledge permanent would require an efficient cold storage system.

The ordinary school subjects. The second type of curriculum organization is by the school subjects, such as history, reading, spelling. Much can be said in favor of the subject-organization; even the prestige of time is on that side. The skill or practice type subjects and also those of the reasoning type are such as to require treatment in subject form. Individual concentration and sustained application are not easy to promote in projects. The attention tends to shift from one thing to another, and many fundamental learning activities are neglected. If a pupil is to learn to add, divide, write, or spell he must make a conscious effort to do these very things. To believe otherwise would be to renounce the major part of the work of the public school.

A danger of the subject organization lies in the tendency to teach the subjects in isolation from one another. When this is done the learner misses that unity of experience so necessary to intellectual growth. The subjects tend to be thought of as something to be finished and subsequently forgotten or discarded.

The teacher is a major factor in determining what type of organization shall be adopted. Some teachers can succeed with a limited number of projects and others usually fail. Some can correlate school subjects so as to give them all meaning and vitality. Others make them drudgery and dull toil. The only way to insure success is for the teacher not only to be broadly educated and well trained, but also to possess a vital interest in social welfare and a sound philosophy of how this is to be attained. No system of incidental learning will ever prove adequate; there must be conscious effort and intelligent guidance in regularly organized institutions.

An integrated curriculum. The project system of organization, or so-called project method of teaching, emphasizes gross activity in individual or group enterprises. There is a measure of integration of experiences within each project, but the projects themselves are more or less unrelated in the same manner as subjects in the program of studies. Both of these types of curriculum organization become inadequate unless a distinction is made between curriculum and program of studies. The curriculum is a body of learnings, and not a group of materials or subjects such as history or arithmetic. Whether reading or arithmetic shall be taught, and in what sequence they shall be taught, are matters of the program of studies. But reading as an ability or process is a part of the content of the elementary school curriculum. History is not a part of the curriculum, but a rational attitude towards one's social world is curriculum content, and is presumably acquired in the courses in history.

We all live in a common world in which the fundamental problems are about the same for all. The needs of individuals

in making adaptations and adjustments are capable of being determined. Knowing what constitutes general education it should be possible to determine what is worth learning in the public schools. On this basis the curriculum becomes an integrated body of learnings in accordance with a unified purpose. Then the question of what organization of the curriculum materials shall be adopted becomes a subsidiary issue, and teaching can be directed towards clearly defined objectives. The integrating factor will be fundamental values, and the product a personality.

SUMMARY

The main generalizations presented in this chapter are stated in concise form below.

1. Since the public school is a social enterprise designed to serve the purposes of society, the teacher's philosophy of education must take account of those forces and social groups which have made the school possible.

2. The conspicuous elements in the American philosophy of education may be stated as follows:

- (a) the people of the United States are convinced that the education of all citizens is essential to a democracy;
- (b) they believe that this education should be at public expense, at least through the period of general education;
- (c) if education is necessary and free, then it should be compulsory;
- (d) the American people subscribe to the opinion that coeducation of the sexes is desirable on all levels of the school system;

- (e) the rights of private and parochial schools in the United States are guaranteed;
- (f) education for practical or utilitarian purposes is still a prominent feature of the American philosophy of education.

3. A sound philosophy must take account of quality as well as quantity in education.

4. Education is essentially growth in the ability to use the higher mental processes. Recognition of this truth is of aid even in elementary subjects such as number work.

5. Instead of certain older philosophies such as those of Calvin, Locke, and Rousseau, which centered about the status of the mind of the child at birth, a better philosophy regards the individual as a unit, or organism.

6. The child as an organism possesses certain characteristics which must be considered in a philosophy of education:

- (a) the child is impressionable, that is, capable of receiving stimulation and retaining certain effects of experience;
- (b) the child is active, dynamic;
- (c) he is capable of almost unlimited mental growth.

7. In civilized society people are socially interdependent and must cooperate to promote the common good; the individualism of pioneer life breaks down in a mature society.

8. A sound philosophy must recognize that the welfare of the individual in society is identical with that of the group.

9. Education is one of our most effective means of social control, because it works from within rather than from force or fear from without.

10. A sound philosophy of education recognizes that the

curriculum is an integrated body of learnings, and not a group of materials or subjects.

EXERCISES

1. Write an analysis and criticism of Thorndike's S-R bond hypothesis.
2. Formulate a statement of your own as to what constitutes an educated man.
3. Discuss the statement that the four fundamental operations in arithmetic are essentially processes of rearranging numbers in a system.
4. What view of child nature is expressed or implied in the poem by Michael Wigglesworth, entitled *The Day of Doom*?
5. Enumerate the elements of Rousseau's educational doctrine which you find in the elementary school practice and theory of today. Visit grade rooms if necessary and observe.
6. Outline the essential features of John Dewey's philosophy of education.
7. Was there any particular occasion for John Locke to affirm that the child's mind is blank at birth?
8. Endeavor to select a vocabulary which will be adequate to describe and explain human behavior in terms of its unity, avoiding such analytical terms as intellectual, emotional, mental, physical.
9. To what extent are individual rights guaranteed under the federal constitution?
10. Should a public school teacher have and express a social philosophy?

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CHAPTER XII

INDIVIDUAL EFFICIENCY IN TEACHING

THE degree to which a factory yields products in proportion to the time and energy expended is a measure of its efficiency. If the efficiency is low the manager seeks the cause and the remedy. The inefficiency may be due to a faulty mechanism, to improper operation, or to a general unfitness of the machine to do the particular work required. In like manner one may properly raise the question of individual efficiency in teaching. Can a teacher obtain a fair estimate of his efficiency? Can he know what causes low efficiency? Does a teacher's philosophy of education have anything to do with efficiency? Is there anything a teacher can do about his personality? Are teachers born as such, or can a person become a good teacher by education and training? These are some of the questions implied in the following discussion.

THE TEACHER'S EQUIPMENT

Education and professional training. Success in teaching undoubtedly requires a certain degree of native endowment or capacity. It has often been said that teachers are born, not made. Perhaps it would be better to say that teachers are born, then made. Those with great native capacity will remain crude and inefficient if uneducated and untrained, while superficial training can do little for those who are

devoid of natural endowment. Cases abound of people who have succeeded without extensive school experience, but one wonders how much more efficient they could have been with a higher education. A diamond is no more of a diamond after having been cut and polished, but it is vastly more useful and beautiful. Also one's native endowment can be immeasurably improved, refined, and polished by one's own efforts in an institution of higher learning. The first stage in the making of a teacher is his general education. This can be accomplished under ordinary conditions within two to four years beyond high school, the minimum being a junior college course in the liberal arts and sciences. Special emphasis, of course, will be given to the subject-matter fields in which one is destined to teach.

Reference to the length of time required in education is often misleading. Stated in terms of function, one's general education should include a mastery of the tools of knowledge and thought, including language and mathematics, an acquaintance with general history and literature, a working knowledge of the basic sciences, social intelligence and efficiency acquired in the social sciences, and a sense of value or appreciation of the higher and finer things of life as revealed in the fine arts, philosophy, and religion. This process must continue till the student possesses self-dependence and a wide variety of worthy interests, including one or two rather consuming interests. In this case the special interest is that distinguished public service rendered by an efficient teacher.

Next in order is to build upon this cultural foundation the teacher's professional education and training. Prospective teachers should be advised not to attempt to study the science

of education until they themselves have acquired at least a general education. To be educated is one thing; to know how one is educated is quite another thing. Professional education and training signify the special preparation of a person for the work of teaching. Ordinarily from two to five years beyond the period of general education will be required.

Professional education and training should include a reasonable degree of mastery of the science of education and a measure of skill in the art of teaching. These requirements may be stated more specifically as follows: (1) a basic knowledge and understanding of human nature and human behavior; (2) understanding of the principles of teaching and learning; (3) knowledge of the history and philosophy of education; (4) knowledge and skill in the techniques of educational diagnosis and the investigation of classroom problems; (5) knowledge of the best practices and the fundamental principles in school organization, administration, and supervision; (6) ability to make a correct appraisal of pupil progress; (7) knowledge of appropriate teaching procedures in one's chosen field of teaching; and (8) a measure of teaching skill acquired through teaching under supervision. It will be observed that these specifications call for an education which is broad and scientific, and not for any specific vocational training. A good teacher understands not only his own specific field, but has a comprehensive grasp of the whole problem of education.

The educational requirements of the teacher have purposely been stated in terms of function. Too much attention has been given to the mere accumulation of credits and certificates. The mere reception of a diploma or a certificate

will not automatically transform one into an efficient teacher. Each candidate must from day to day take great care to do the things which will make for growth in the desirable traits and thus acquire the necessary equipment of a real teacher. To make the professional education and training most effective, one must assume a professional attitude during the entire period of study and preparation, not merely when a position is sought. Such an attitude gives confidence and a wholesome point of view.

Significant life experiences. Every great teacher has had great experiences. Not that one must discover a continent or fly across an ocean, but there must have been something noble, something grand, something blessed, which thrilled and gripped the soul to the extent that a person is never the same again. Such experiences may include study at the feet of distinguished teachers, contact with a great institution, travel in distant lands, contact with a magnetic personality, or perchance it may be tragedy or some form of religious experience. At any rate these are the steps or terraces which break the monotony of mediocrity and mark the progress of a person upward. One cannot remain the same who grapples with great ideas; one will grow, and still more thrilling ideas will emerge.

Other things being equal, teachers improve with teaching experience up to a certain limit. It has been estimated that experience in teaching does not improve one after ten years of service. Some boards of education make the unfair requirement that every teacher employed must have had teaching experience. Obviously teachers must begin somewhere. After all, there is no good reason why teaching cannot be of a high grade in the first year of experience. On the other

hand, experience in teaching becomes a detriment to some, because they have performed so long on a low level that they have become established in their ways and incapable of rising to a higher plane of efficiency.

Personality. No attempt will be made here to give a psychological analysis of personality, but some matters of practical value to the teacher will be considered. The first question is whether the basic personality traits can be improved. Some people dismiss this matter by saying that personality is the *unknown* quantity in success. If a man fails in business and his friends tell him he lacks personality, he may accept the verdict as a life sentence and not try to do anything about it. This is the wrong attitude. We do know what the ingredients of a pleasing personality are.

Every one who has responded to social stimulation has personality. It is only a matter of organizing one's activity in a way to impress others favorably. If a teacher is lacking in this respect, the pupils readily sense it. Something has gone wrong. He fails to please his associates. There must be some way to explain the difficulty. We like people better when they quit doing certain things. Also we cease to like people when they develop certain habits and attitudes. It is easy to recall someone who has improved in personality. These obvious facts suggest that something can be done about the matter. It seems that underlying what is called personality exist certain characteristics which are largely due to heredity, and others which result from learning or environment.

Among the hereditary traits some are physical and some mental. Size of body, physical vigor, facial features, quality of voice, and distinctiveness in sex are usually considered

fixed factors, but as a matter of fact these can be partially controlled or improved. There is no virtue in being ugly if one can be beautiful. We owe it to others to present as good an appearance as possible. No one likes a man who is effeminate or neuter. Likewise the woman whose personality attracts and wins is always feminine. Certainly a person can by training remove much of the harshness, shrillness, or monotone from his voice. The voice is an important aspect of one's personality, and deserves special cultivation.

Some people tend to be extremely introvert, while others are extravert. The introvert keeps himself in the background on social occasions, lives very much to himself, fights his battles in his imagination, is scholarly and conventional, and is usually meticulous about everything. The extravert is just the opposite. He is the handshaker, the social leader, meets people easily, is jovial in disposition, despises details, and usually says what he thinks. The most successful teacher seems to have a personality somewhat between these extremes. At any rate he needs scholarship and the ability to deal with people.

Perhaps the most unchangeable inborn trait is mental capacity or mentality. This biological disposition determines the extent to which one can become intelligent. No doubt this is an important factor in personality, because it largely determines how many and to what extent acquired traits can develop. It is hardly conceivable that one should find a pleasing personality among idiots and imbeciles. On the other hand, one may find great intelligence with a completely distorted personality.

Other traits of this group include temperament and mental balance. Little can be done about these characteristics,

except through extreme effort and rigid self-discipline. Some people appear to be of a melancholy disposition and never see through a cloud of gloom, while others continually radiate sunshine and good cheer. This trait is observable even in small children. Perhaps it is related to health, but it is not due to that altogether, because it is observable in healthy adults and children as well. Some are quick to respond, right or wrong; others are sluggish and deliberate. Some are naturally retiring and averse to publicity; others are unhappy unless they are in conspicuous positions. Mental balance refers to poise, steadiness, or calmness in a trying situation. It is of special value in various classroom situations where the unexpected is sure to arise. An impulsive teacher needs a double portion of self-control and discipline.

Fortunately for the teacher, the great majority of personality traits can be acquired. Below is a list of desirable traits * which can be acquired by any person who is willing to make a serious effort. Much time and a great deal of hard work will be required, but the results will be sufficient reward.

Traits or Habit-Systems

acceptance of criticism	honesty	sympathy
sense of humor	sincerity	tact
willingness to cooperate	fair play	fortitude
fidelity to promises	punctuality	address
sense of duty	optimism	enthusiasm
good taste	refinement	reserve
open-mindedness	confidence	scholarship
sound judgment	adaptability	originality
unselfishness	courtesy	neatness
sportsmanship	patience	gentleness

* The word "trait" is not used here in any restricted or technical sense. It is simply the best word available for the purpose. It is almost synonymous with what some call a "habit system."

A list of this kind, though incomplete, may suggest points of attack in the improvement of personality. Granting that these characteristics can be acquired at least in a measure, we can easily imagine what a change would be wrought in any person who improves noticeably in all of them.

The following procedure is suggested for the improvement of personality, although it is admittedly idealistic and difficult to do.

(1) There must be a genuine desire to improve. No half-hearted, lukewarm attitude will do any good. A person must realize that there is room for improvement and develop a passion to rise to a new high level.

(2) Self-criticism and criticism by others will be needed. One *must* discover just what is lacking. The suggestions and criticisms of friends and others must be sought and heeded. They are probably right. Certain tests have been devised to help in this analysis.

(3) Attention must be focused upon the desirable traits which people of pleasing personality possess. One should look for these, seek to imitate them, and seize every opportunity to exemplify them in conduct. It is well to keep a check list and check up on one's self frequently to see which traits are present.

(4) No exceptions must be permitted in the practice of these "habit systems." They should begin at home even among the most intimate associates. Time must be allowed for growth; these are not put on, but must grow into the fabric of personality.

(5) Pretense must be avoided. Any kind of make-believe or affectation deceives no one but the pretender.

(6) Since for practical purposes one's personality exists in the minds of other people, it is always necessary to make others feel important in one's presence. One who finds nothing of interest and importance in others will not be proclaimed a great personality.

It is a significant fact that a teacher's personality is usually judged not by a careful analysis of all of his traits, but by some peculiarly striking or prominent trait. Some little mannerism, attitude, or trait action may become so disagreeable as to overshadow any good traits which the teacher may possess. These immediately prejudice others against an accurate appraisal of such a person. It may be that a relatively insignificant change from some trifling habit system to another would completely change the impression that person makes upon others. Certainly these seemingly trivial matters have prevented teachers from securing or holding positions which they were otherwise qualified to fill. Personality cannot be dissociated from personal charm and social finesse, and these can be acquired to an astonishing degree by any normal person who is willing to pay the price to do so.

Philosophy of education. A very significant part of a teacher's equipment is his philosophy of education. Since another chapter is devoted to this topic, it remains merely to suggest its importance in teachers. Why this important matter is usually omitted from information blanks for teachers is not clear. Coworkers should be of kindred minds and congenial spirits, especially regarding the major issues of the educational program. Supervision is difficult and a unified program of instruction practically impossible in a school torn by radically different and absurd philosophies of educa-

tion. To have no philosophy is about as bad as a wrong philosophy, because it suggests either stupidity or lack of interest. A philosophy, a creed, a point of view makes one more alert and progressive; it serves as a challenge to work and tends to prevent stagnation.

THE TEACHER'S CLASSROOM TECHNIQUE

Up to this point (in the chapter) the discussion has dealt with the teacher's experiences and point of view. The next topic concerns the efficiency of the teacher in action—the real test of a teacher. In spite of all the educational theory and personality traits previously mentioned, a teacher may yet fail. Education, professional training, and a pleasing personality will not guarantee success in teaching. The teacher must *function* in the school environment.

Efficiency in matters of routine. Good management anticipates problems and solves them in advance. The teacher who comes to school without any plan or program is already a failure. A knowledge of the psychology of childhood should enable one to know fairly well in advance what to expect from children of various ages, and the type of treatment necessary. Efficient management is not only essential to good teaching, but it is really a phase of teaching, in that it contributes to the preparation of learning situations. Matters of routine constitute a continuous function, however, while learning situations change from time to time.

Efficiency in the management of routine matters is not merely a means, but an end, since it is within itself a learning activity. Pupils under good management learn to assume responsibility for the welfare of the group, to manage themselves or develop self-control, to cooperate, to develop ini-

tative, and to acquire self-dependence. To be a part of and to contribute to a miniature society is within itself an important objective, a significant discipline.

Most problems of discipline are usually only problems of instruction. That is, if instruction is effective and systematic, there will be few occasions for disorder or cases of discipline. Inefficiency in teaching is readily detected by pupils. When the teacher seems confused, undecided, or void of resources, an occasion arises for some pupils to take advantage and create a disturbance. When pupils are happily and busily engaged in useful work, the group is well disciplined, and few if any rules will be necessary.

The teacher is employed and paid to render service on the professional level. His time and services are, therefore, too valuable to be consumed in petty details of routine. It follows that good management requires the teacher to decide what matters can be routinized and attend to this duty immediately. As far as possible pupils should be taught to attend to many routine matters without diverting the teacher's attention from his work; these may include leaving the room, speaking to another pupil, using books and materials, caring for the room, disposing of wraps and lunch boxes, and many other similar activities. In brief, individual efficiency in management is measured by the degree to which it enlists the hearty cooperation of the group in promoting its own welfare in the general program of instruction.

Group control technique. Assuming that a teaching situation has been organized for a group, the teacher must secure and maintain attention and effort. Any one can secure mass attention for a moment, but not every one can maintain a high level of efficiency during a teaching period or through-

out the day. Group control during teaching refers to the degree to which the teacher secures the continuous effort and attention of every pupil during the teaching period. Any observer can make a close estimate of group control by counting at each half-minute interval the number of pupils who are evidently cooperating with the teacher and the group. These counts can be averaged and the percentage found of the entire group. For example, if eighteen out of twenty-four is the average of those who are busy with the task at hand, then the efficiency of group control is seventy-five per cent. This is perhaps the most critical test of a teacher's efficiency, because if group control is low, it is probably due to weaknesses in the teacher of which even the pupils are aware.

Effective means of securing group control have been suggested previously in numerous connections. There is no trick about it; it is inherent in good teaching technique. If teaching is systematic, there will be good control technique, and problems of discipline will be negligible. In the last analysis the teacher must exhibit speed, vitality, enthusiasm, and resourcefulness. Pupils must not get the impression that the teacher is slow, weary, undecided, or destitute of resources. They must feel that there is an unlimited reserve in these matters.

Artistic teaching. Although teaching rests upon a scientific basis of laws and principles, it is nevertheless an art. Those who are prominent on stage and screen, for example, leave the impression of an achievement that is artistic, finished, beautiful. Every stroke of the brush of the master painter is a product of skill, a masterly touch, a stroke of genius. And so with the other fields of art. Excellent teach-

ing rises to the same artistic level. Certain ingredients are necessary; certain things must be avoided.

There is an individualistic touch about artistic teaching. This makes it different from broadcasting. That is, the efficient teacher has in mind not an imaginary group, but each individual in the group. His spoken words, his assignments, his questions are addressed to individuals with a consciousness of the needs of each. To do this properly implies a knowledge of the learners, their ideals, their philosophies of life, their hobbies, their peculiar whims and dispositions. In our ordinary social contacts we must deal with each individual directly and with a technique appropriate to his case. We can make up some people's minds for them; they want us to. But with others we dare not attempt such a thing. This principle holds in teaching. Understand the learner, diagnose his case, deal with him on his own ground, and even humor his whims till you get down to where he lives. Then teach him.

A lively sense of humor improves the teacher's art. Burdens are lightened, cares dispelled, and friendships strengthened when people learn to see the happy side of things. It is too bad that some people take everything personally, become fretful, and worry about mere trifles. Some things, even though they are serious, should not be taken too seriously. It is a good professional tonic to look for a joke or a happy idea in a vexing situation. A humorous reaction will usually relieve an otherwise gloomy, dangerous situation. Really it is not what others do to us, but how we feel, think, and react that makes our worries or happiness in the school room.

Artistic teaching conserves time by avoiding superfluous

activity. The brick or stone mason increases his efficiency by making the fewest possible strokes or movements of his hands. In typewriting lost motion is eliminated by use of the touch system of attack. In the classroom excessive time can be consumed in routine matters such as collecting or passing out papers or other materials; entering or leaving the room at the recess periods; or arranging the teacher's materials. Awkwardness and repetition of language by the teacher not only consume unnecessary time but actually hinder learning. Some teachers kill interest and make learning situations difficult because they are so long in getting started; they never seem to be quite ready to do anything.

The artistic teacher is polished in speech, in dress, and in manners. Any lack in these respects is absolutely intolerable. There cannot be artistic teaching without an artistic teacher. Slovenliness is not in order anywhere, most especially behind the teacher's desk. It may be easier to speak slang or jargon, to dress for comfort, or to behave like a rube, but a teacher's liberty must end where the rights and sensibilities of others begin. Refinement is a mark of the educated man, and is especially appropriate to a teacher.

Professional growth through action. Efficiency implies growth of the teacher professionally. When growth ceases, efficiency begins to decrease. An important part of the teacher's operative technique is the maintenance of a progressive, scientific attitude. Continuous investigation of classroom problems as a contribution to the profession is essential. To accomplish most in this respect a vital relationship must be maintained with the appropriate professional organizations and the constant stream of educational literature. Cooperation with research workers, both inside

and outside the school, offers opportunity to keep one's self educationally fit.

Correct use of terms. One of the requirements of any science is correctness and uniformity of its terminology. Words must be used in the same sense each time and must convey the meanings desired. In teaching it is impossible to convey the teacher's meaning unless the medium of expression is used with precision. In educational literature may be found many terms brought over from former days and still used. Many of these, such as "lesson," "recitation," "method," "project," "instinct," "faculty," "repetition," and "habit," are not only used ambiguously but are of doubtful importance at the present time.

Many teachers do not know the difference between education and training, drill and instruction, curriculum and program of studies, method and device, intelligence and rationality, or capacity and ability. Many words which are crucial or decisive in a line of thought are used with such looseness and variation as to confound the wisest. Since language precision is known to be vitally related to the higher thought processes, it seems that accuracy in the use of terms is highly essential in the important business of teaching. Ability to define words correctly and to indicate their fine shades of meaning is now a lost art in our schools. A deliberate effort has been made in this book to employ terms in their true sense in the hope that teachers who read these pages may be encouraged to improve their efficiency.

THE TEACHER'S ETHICS

Relationship to learners. One of the commonest charges which pupils make against teachers is that they are unfair,

or partial to certain ones. The charge is too often true. Favoritism may be shown by allowing some pupils special privileges and immunities, by giving more help and attention to some than to others, or by asking only a few to fill the positions of honor and prominence. Teachers are also accused of dishonesty in assigning marks or grades, a charge which is not always without foundation. They are said to be friendly and sociable to some and cool and distant to others.

These and other similar complaints probably arise from a common cause, and that is a lack of professionalism on the part of the teacher. There must be a professional relationship between teacher and learner. As long as the relationship remains on a personal basis, friction is sure to arise. Often, for example, pupils who have not been properly informed will consider marks as personal estimates from the teacher. Indeed the temptation is strong for teachers to fall into this error and distribute marks on the basis of personal regard for the learners. It has already been suggested how this situation can be partially avoided by use of objective tests and assignment of marks without a knowledge of whose names are on the papers. Informal, friendly association with pupils outside the classroom situation will help to remove the personal feeling and establish a professional relationship.

The use of sarcasm or abusive language, especially in public, is unethical and unworthy of a teacher. Resort to such a practice is usually indicative of weakness or inability properly to handle a situation. Much more can be accomplished in private conference, because in public the teacher assumes an undue advantage of the pupil, and an injustice may be committed. Extreme caution must be taken lest a defense-

less pupil be required to maintain a higher standard of conduct than the teacher.

Genuine sympathy is usually a cure for most of the misunderstandings between teachers and pupils. Sympathy as used here means the disposition to view things from the standpoint of others. Teachers need it, and so do the learners. Frequently the nonconforming pupil needs not to be condemned, but understood. Furthermore, it is unethical to expect a pupil to behave always according to adult standards which are far in advance of his level of maturity. Sympathy is not merely a matter of charity; it is an obligation coming within the realm of ethics. Pupils are free human beings; they are not owned by teachers or parents. They must be dealt with not according to their conduct under an adult code of regulations, but according to their rights as immature citizens. Such treatment will even improve learning conditions.

Relationship to associates and superiors. In general the ethical relationship of teachers one to another is the same as their relationship to other people. The peculiar situation of a school teacher, however, requires certain special precautions. A few examples will be sufficient. A most unethical practice is for one teacher to speak unkindly of another teacher in the presence of pupils. The teacher who undermines confidence in other teachers does the same for himself and disturbs the unity of the school. When a teacher comes to a new situation there is a temptation to blame the preceding teacher for all that is wrong. Or it may be a case of ascribing all troubles and difficulties to the teacher from whose room the pupils have been promoted. Common courtesy demands that a spirit of mutual cooperation exist

among teachers in keeping with the dignity of the profession.

The teacher has certain obligations to the principal, supervisor, superintendent, or other superior officers. One of these duties is to recognize these officials. At least their position or office demands respect. Nothing will be lost, and much may be gained by courteous treatment of one's superiors and loyalty to the administration. Another important duty is punctuality. Nothing is quite so annoying to a principal as a teacher who has a chronic case of tardiness. No matter what hour may be set for beginning, some teachers will be tardy. It is a vicious habit which should be overcome. Such lack of punctuality spoils the smooth operation of a school organization. Pupils soon lose respect for the teacher, or at least they question his sincerity, and tend to fall into the same delinquency. Time is lost. Problems of discipline arise. The whole machine is handicapped and the result is low efficiency. Such teachers often take even a further unethical step by being absent without notifying the proper official. Such practices are unethical and discourteous, because they disturb many others and rob them of valuable time.

Cooperation is a part of the teacher's ethical code. One may be punctual and not cooperate otherwise with the officials. Occasionally an ugly spirit is manifested by a teacher who prides himself in disagreeing with the principal or superintendent. He will not make reports properly, he teaches over time, quarrels about his room, refuses to help in solving common problems, opposes any reform or experiment unless he originates it, avoids teacher's meetings, or criticizes all that the principal does. Whatever is done by the school, an exception must be made for this specially privileged, dis-

grunted teacher who seems to enjoy disputes and quarrels.

Relationship to the profession. Outside the particular school in which one is engaged, there are essential obligations. A teacher should recognize and work with the professional organizations which seek to improve education and the profession in general. These groups establish various standards, such as educational qualifications and salary schedules, in the interest of higher efficiency in the service. It is most unethical to attempt to evade these or engage in underbidding. One would not think highly of a surgeon who would bid for a subject for his operating table. Physicians will not tolerate any bargaining for their services. Why should teachers adopt a lower code of ethics and accept the status of a day laborer?

In seeking employment or change of position teachers should observe ethical standards. It is unethical to apply for a position which is not vacant, or about to be vacated. Such procedure is unfair to the occupant of the position and to his employers. It should be stated also that it is unethical for an employer to contract with a teacher during his term of contract without consulting the principal or superintendent under whom the teacher serves.

The extent to which teachers should advertise their services calls for some debate. Fortunately there are bureaus for the placement of teachers. These may be either commercial or special agencies conducted by educational institutions for the purpose of placing their graduates. Personal advertising in newspapers and journals is not considered ethical by the teaching profession. Since the teacher's work is open to the inspection of the public, advancement will come to the meritorious teacher without commercial advertising. Every

teacher should feel obligated to help maintain a respectable profession. Those who are content to remain at the bottom of the scale are a discredit to the profession and to society.

SUMMARY

The basis for individual efficiency in teaching is indicated by the following general statements.

1. A broad general education is essential to efficiency in teaching. This cultural background can usually be achieved by the end of the second year beyond high school.

2. Good teaching requires an acquaintance with the science of education. This professional equipment can usually be acquired in two to five years of study beyond the period of general education.

3. Personality is an essential aspect of teaching efficiency. Since teaching personality is largely a result of the formation of habit systems or trait actions, it can be improved by any normal person.

4. Efficiency is promoted by acquiring and utilizing a sound philosophy of education.

5. Good classroom management anticipates problems and solves them in advance.

6. Classroom efficiency requires that certain functions be made matters of routine and that the teacher have the maximum time for professional services.

7. Group control is a measure of individual efficiency in teaching.

8. Efficient teaching is artistic. It exhibits that which is technically correct, polished, and beautiful.

9. Efficiency in teaching requires the correct use of educational terminology.

10. Individual efficiency requires that a teacher's relationships with others be on an ethical plane.

EXERCISES

1. Draw up a code of ethics for teachers. Consult professional journals for suggestions.

2. Think of the best teacher and the poorest teacher you ever had. From the list of traits given in this chapter check those possessed by each.

3. Assume that you are a prospective teacher. Make a list of the traits which you lack.

4. Measure the efficiency of a teacher with respect to his group-control technique. Visit during the lesson period, count at one-half-minute intervals the number of pupils who are attentive to the work being done, and find the average for the entire period. The percentage of the pupils held at attention to the work done is a measure of group control.

5. Examine the various rating scales for teachers. Construct a scale of your own for measuring individual efficiency in teaching.

6. Should the education and professional training of elementary school teachers be equal in extent to that of high school teachers? Justify your position.

7. Recall the best teacher you ever had. List the significant acts or deeds of this teacher which impressed you most.

8. Make a list of practical ways in which a teacher may increase his efficiency in teaching performance.

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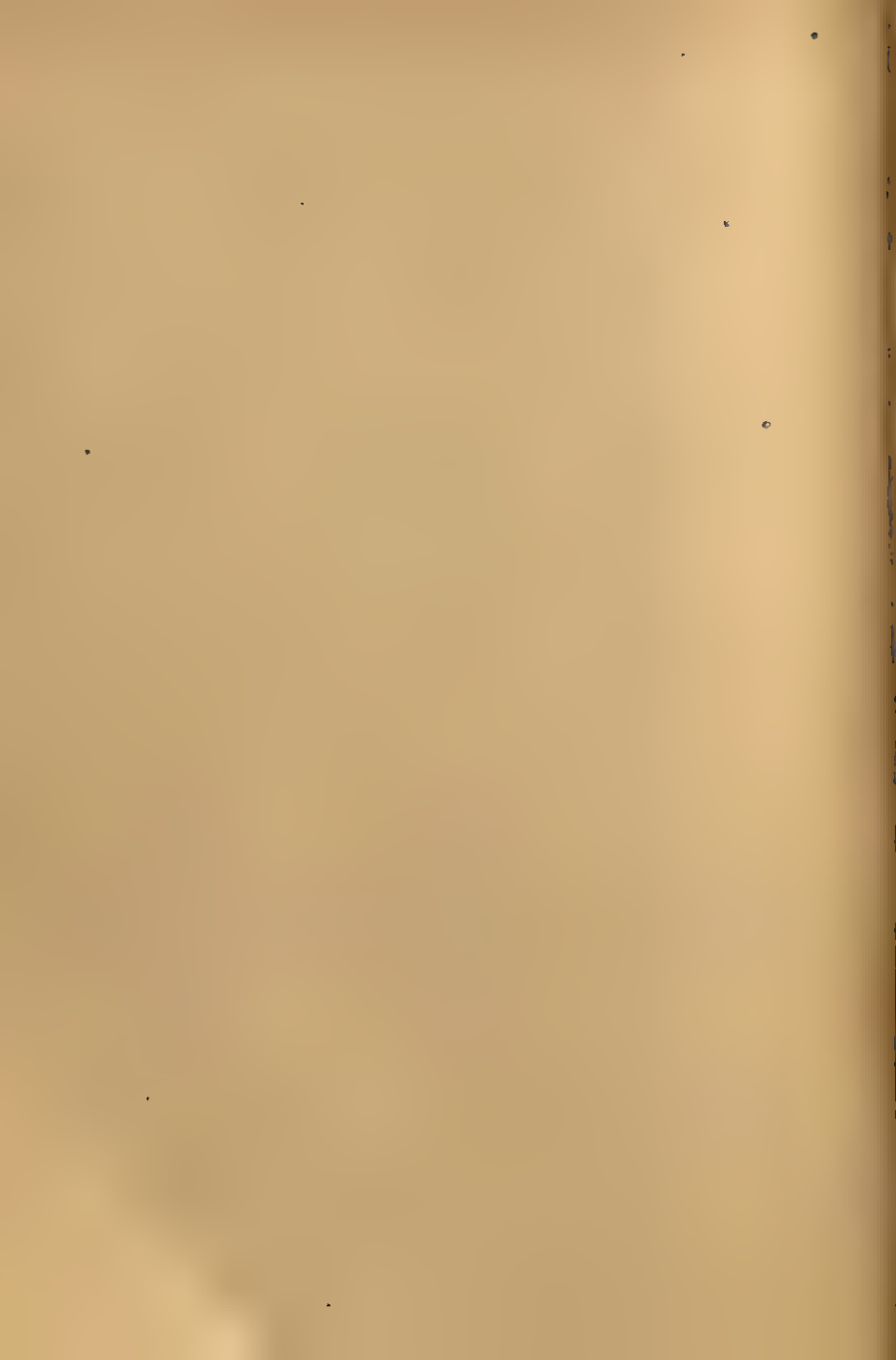
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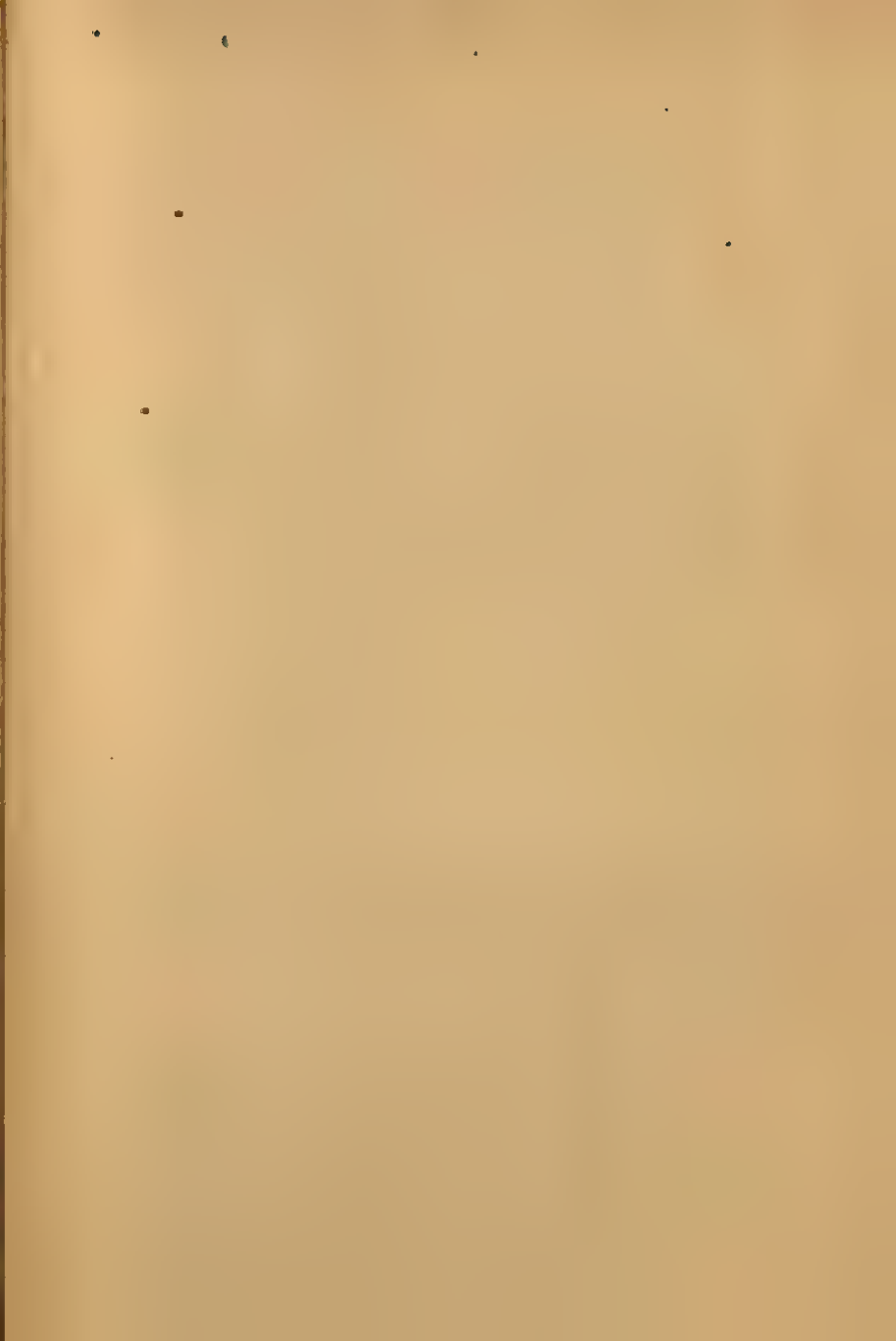
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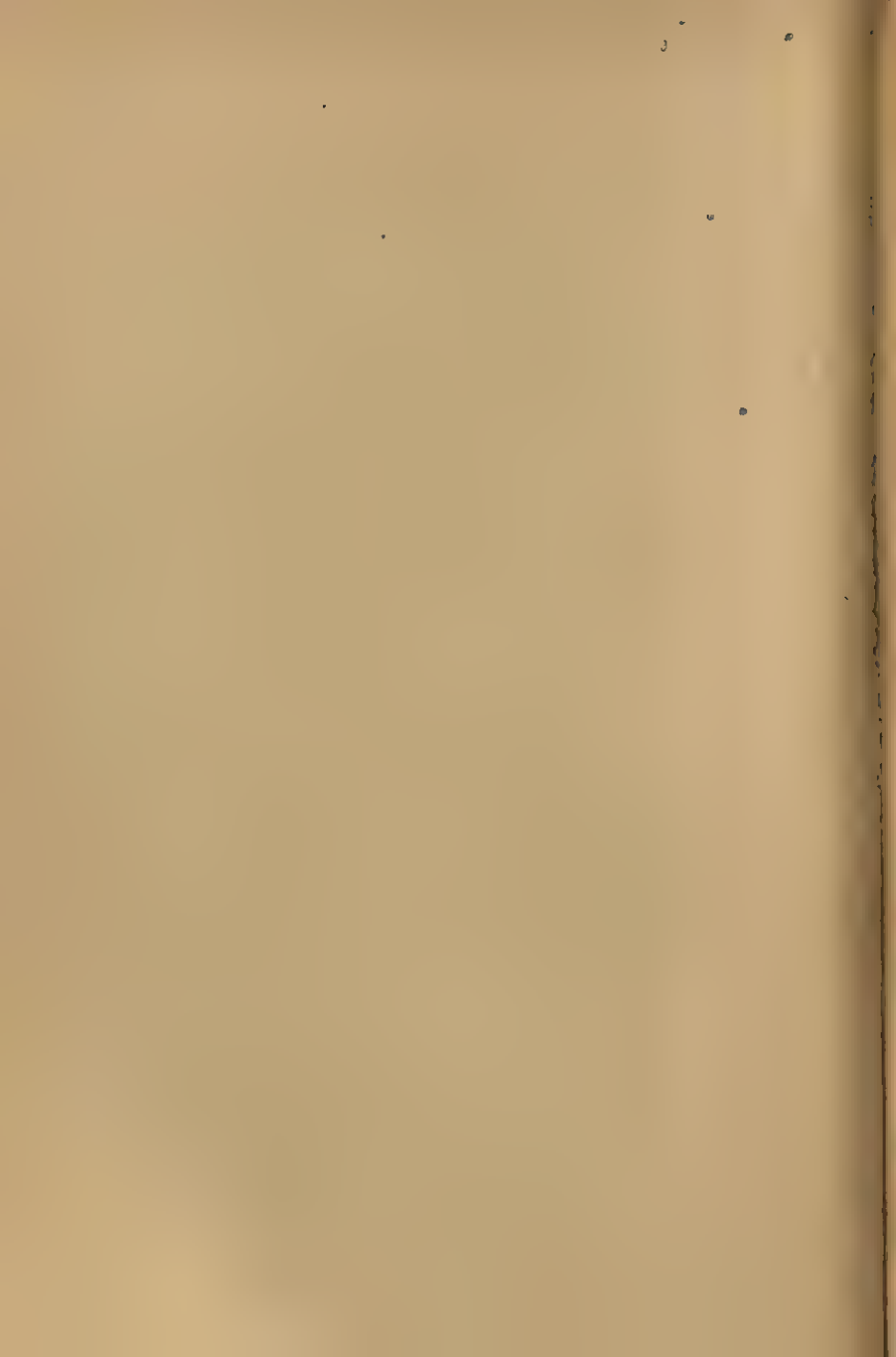
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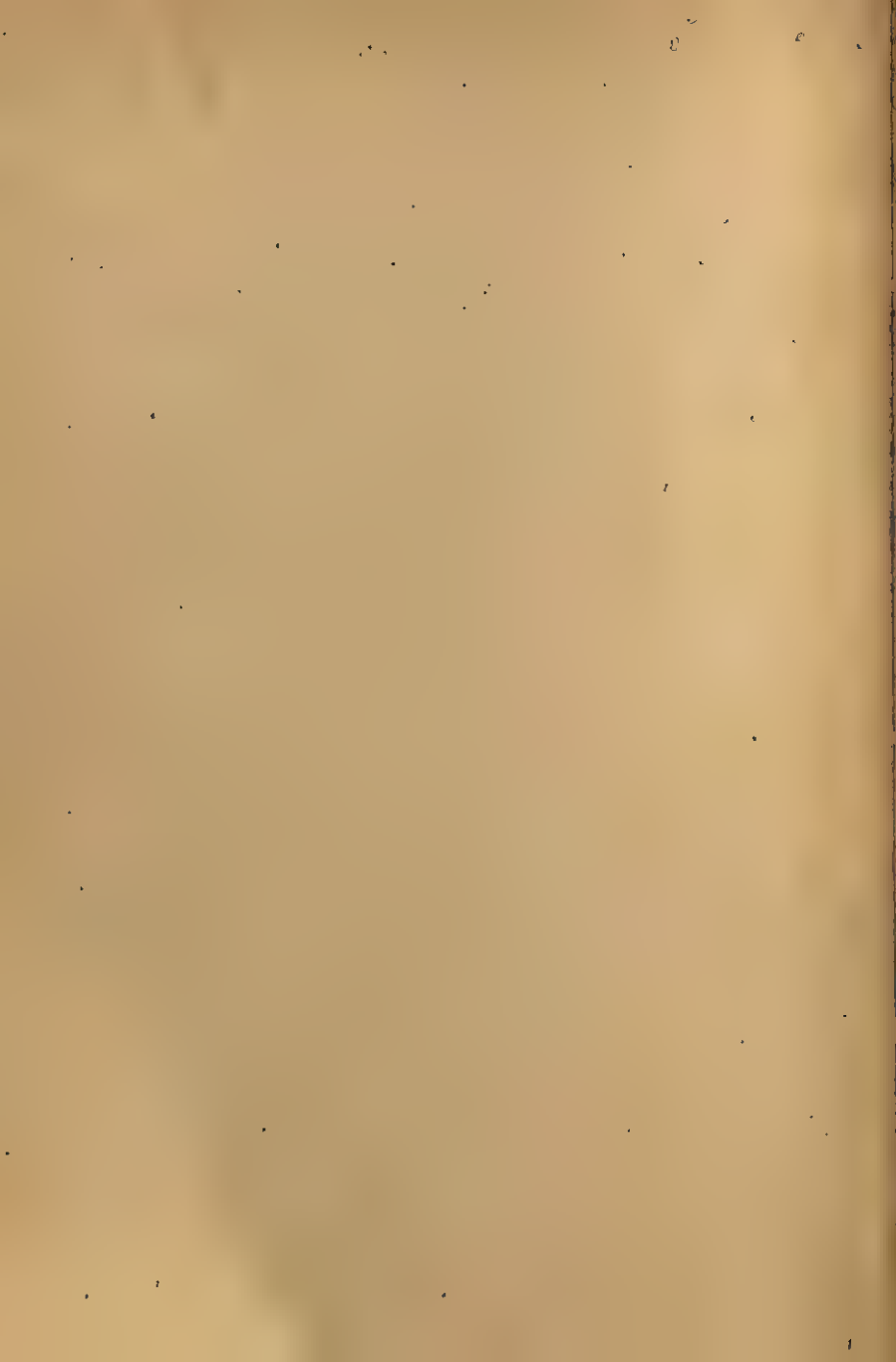
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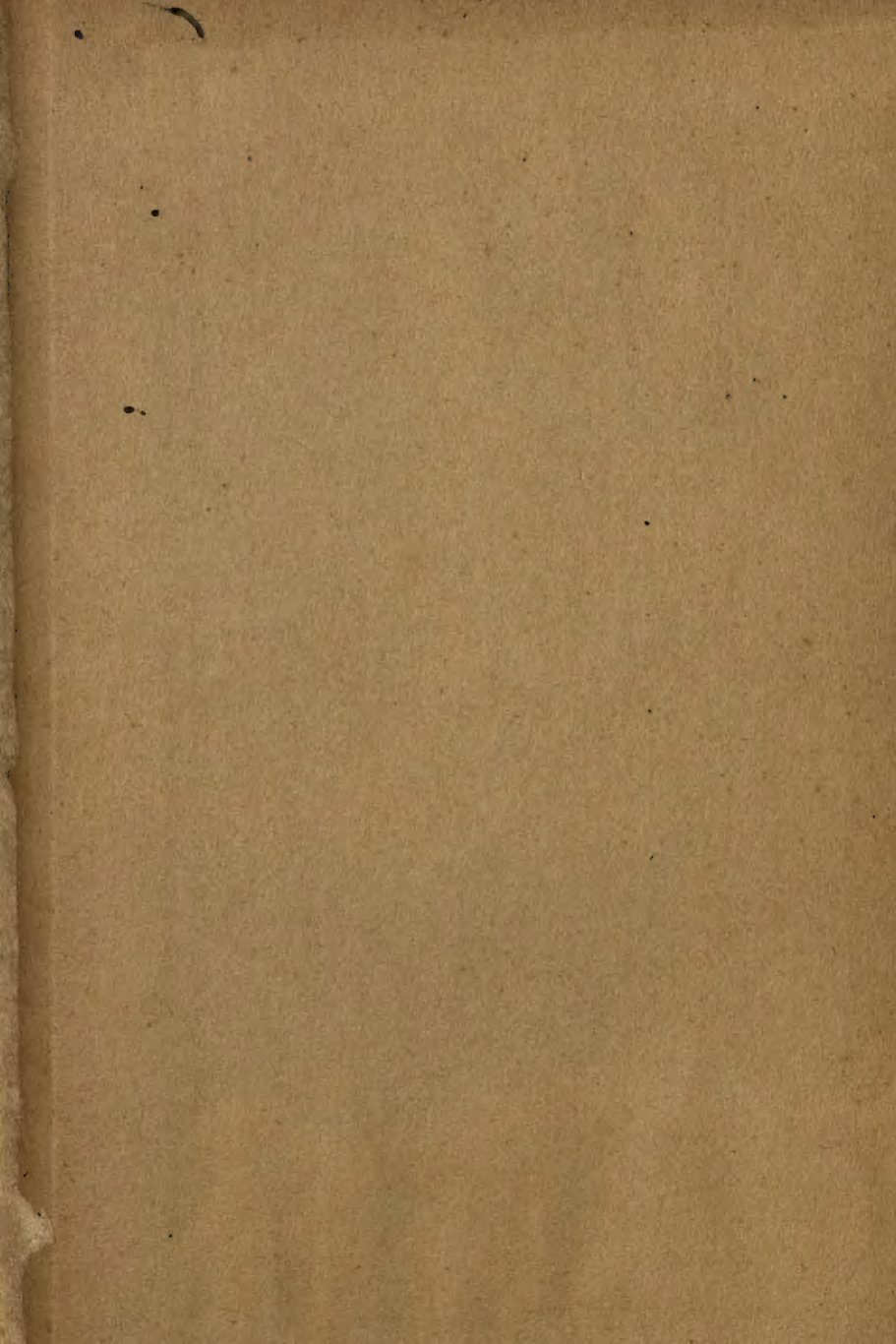
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